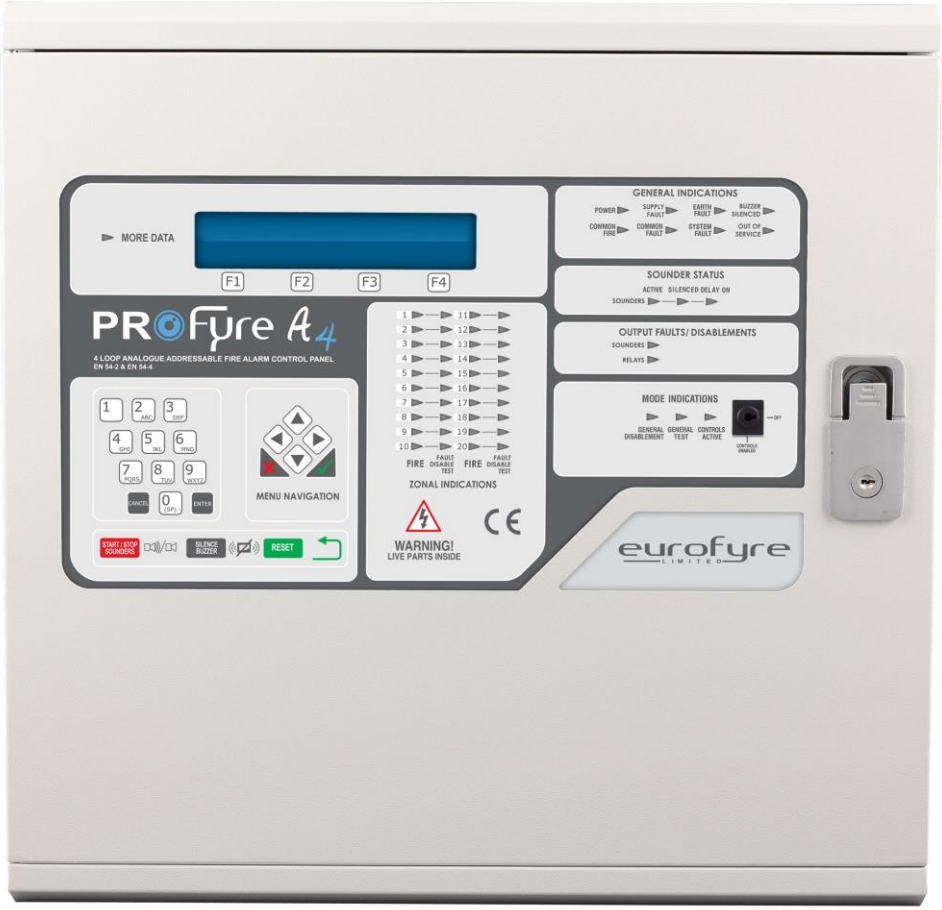
PROFyre A4

ONE TO FOUR LOOPS

ANALOGUE ADDRESSABLE FIRE ALARM CONTROL PANEL



INSTALLATION MANUAL

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SAFETY INFORMATION & USE OF THIS MANUAL

WARNING: Read this section completely before commencing installation.

1.1 INSTALLATION INFORMATION

THIS FIRE ALARM CONTROL PANEL IS CLASS 1 EQUIPMENT AND MUST BE EARTHED.

This equipment must be installed and maintained by a qualified and technically experienced person.

This C.I.E. must be wired to a fused spur rated at 3A. It must NOT be connected via a removable plug, or be connected through an RCD device.

Prior to commencing installation of the control panel, ensure that adequate precautions are taken to prevent damage to the sensitive electronic components on the display board and the control board due to electrostatic discharge. You should discharge any static electricity you may have accumulated by touching a convenient earthed object such as an unpainted copper radiator pipe. You should repeat the process at regular intervals during the installation process, especially if you are required to walk over carpets.

The panel must be located in a clean, dry position, which is not subject to excessive shock or vibration and at least 2 metres away from pager systems or any other radio transmitting equipment. The operating temperature range is 0ºC to 40ºC; maximum humidity is 95%.

HANDLING THE PCBS

If the PCBs are to be removed to ease fitting the enclosure and cables, care must be taken to avoid damage by static.

The best method is to wear an earth strap, but touching any earth point (e.g. building plumbing) will help to discharge any static. Always handle PCBs by their sides and avoid touching the legs of any components. Keep the PCBs away from damp dirty areas, e.g. in a small cardboard box.

1.2 SAFETY PRECAUTIONS DURING NORMAL OPERATION OF PANEL

NOTE: When the ProFyre A4 panel is operating normally, i.e. not being tended by service personnel, the access door must be closed and locked. After locking, the key MUST be removed and ONLY held by the responsible person and / or the service personnel. It must under NO CIRCUMSTANCES be held by the user.

1.3 BATTERY INFORMATION

This C.I.E. uses 2 x 12V Sealed Lead Acid (SLA) batteries with capacities between 7Ah and 17Ah.

CAUTION:

RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO BATTERY MANUFACTURERS INSTRUCTIONS.

IMPORTANT NOTES ON BATTERIES:

DANGER: Batteries are electrically live at all times. **NEVER short circuit the battery terminals.**

WARNING: Batteries are often heavy. Each 17Ah battery weighs 6.1kg. Take great care when lifting and transporting batteries.

DANGER: Do NOT attempt to remove the battery lid or tamper with the internal workings of the battery. Electrolyte is a highly corrosive substance, and presents significant danger to yourself and to anything else it touches. In case of accidental skin or eye contact, flush the affected area with plenty of clean, fresh water and seek immediate medical attention. Valve Regulated Lead Acid (VRLA) batteries are “low maintenance”, requiring no electrolyte top-up or measurement of specific gravity.

1.4 PRODUCT DISPOSAL AT THE END OF ITS WORKING LIFE

Like all electronic equipment, at the end of its working life this unit should not be disposed of in a refuse bin. It should be taken to a local reprocessing site as per the guidelines of the WEEE directive, for correct disposal.

1.5 EXPLANATION OF ACCESS LEVELS

The ProFyre A4 System has the following access levels.

ACCESS LEVEL	ACCESSED BY	ACCESS METHOD	FUNCTIONS ACCESSED
1	General public	Default state	View Panel Override delay (if used)
2a	Responsible person	Keyswitch to ON	Start/stop sounders Silence buzzer Reset panel
2b	Responsible person	Keyswitch ON & user password	Enable / disable sections of system Test Mode View Zones / Points View event log Turn off delay
3a	Installer / Engineer	Keyswitch ON & Installer password	Configure loops Assign zones Assign Text to each point Modify Alarm Operation Programming Configure network (if fitted) System Diagnostics (LED blink / loop Autocheck) Change passwords Configure RS232 Output (if fitted)
3b	Installer / Engineer	Open Enclosure Lock	Connect wiring during Install Battery check during Maintenance Reset System fault Update Cause & Effect programming via USB
4	Authorised Service Engineer	Open Enclosure Lock & PC Programming Software	Configure Panel protocol

Care should be taken to ensure that the access method for each level is only available to suitably qualified personnel.

1.6 USING THIS MANUAL

This manual explains, in a step-by-step manner, the procedure for the installation of the ProFyre A4 Fire Alarm Control Panel.

This Installation Manual must not be left accessible to the User.

1.7 FIRE ALARM SYSTEMS CODE OF PRACTICE

This manual is not designed to teach Fire Alarm System design. It is assumed that the System has been designed by a competent person, and that the installer has an understanding of Fire Alarm System components and their use.

We strongly recommend consultation with a suitably qualified, competent person regarding the design of the Fire Alarm System. The System must be commissioned and serviced in accordance with our instructions and the relevant National Standards. Contact the Fire Officer concerned with the property at an early stage in case he has any special requirements.

If in doubt, read BS 5839-1:2002 + A2:2008 “Fire Detection and Alarm Systems for buildings (Code of Practice for System Design, Installation, commissioning and maintenance)” available from the BSI, or at your local reference library.

1.8 EQUIPMENT WARRANTY

If this equipment is not fitted and commissioned according to our guidelines, and the relevant National Standards, by an approved and competent person or organisation, the warranty may become void.

2. PROFYRE A4 OVERVIEW

2.1 ABOUT THE PROFYRE A4 FIRE ALARM PANEL

- The ProFyre A4 fire alarm control panel is a 4-loop, 20 zone analogue addressable Fire Alarm Control Panel, with 125 devices per loop.
- It can support a 64 panel network control panels and repeater panels.
- Sounders, strobes, relays and isolators can be combined at the same address as smoke detectors, heat detectors or combined smoke / heat detectors.
- The PSE is a switch mode power supply, with a total rated output current of 5A, with a max output whilst charging of 4.1A.
- A4 supports all ProFyre addressable devices.
- The maximum loop length is 2km.
- It has 2 conventional sounder output circuits and a 24V DC auxiliary output, each capable of supplying 450mA (each fitted with 0.5A fuses).
- The LCD display is 40 x 4 characters.
- It has a set of voltage free fire relay contacts rated at 1A SELV.
- It has a set of voltage free fault relay contacts rated at 1A SELV. This relay is normally energised to allow a fault output in the case of total power failure.
- It has the ability to disable any point, zone, sounder or output.
- It has a one man test mode, which resets the zone in test after a few seconds.
- It will operate in ambient temperatures of –5 to 40°C.
- It will operate in a relative humidity of up to 95% (non condensing).
- It will withstand vibrations between 5 & 150 Hz.
- ProFyre A4 should be maintained as described in the User Manual, Maintenance Guide & Log Book.

FUNCTIONS REQUIRED BY EUROPEAN STANDARD EN 54 PART 2

The ProFyre A4 fire alarm control panel provides the following mandatory and optional functions as prescribed by the European standard EN 54 Part 2.

(a) Mandatory Functions

The mandatory functions and corresponding indications provided by this panel are:

- fire alarm
- fault warning
- disabled
- quiescent (when the CIE is powered by a power supply conforming to EN 54-4 and no other functional condition is indicated)

(b) Optional Functions

The options with requirements provided by this panel are:

- output to fire alarm devices (i.e. sounders)
- delays to outputs
- fault signals from points
- disablement of addressable points
- test

NB the terms 'device' and 'point' are used interchangeably throughout this manual.

2.2 PANEL DESCRIPTION & DESIGN CONCEPT

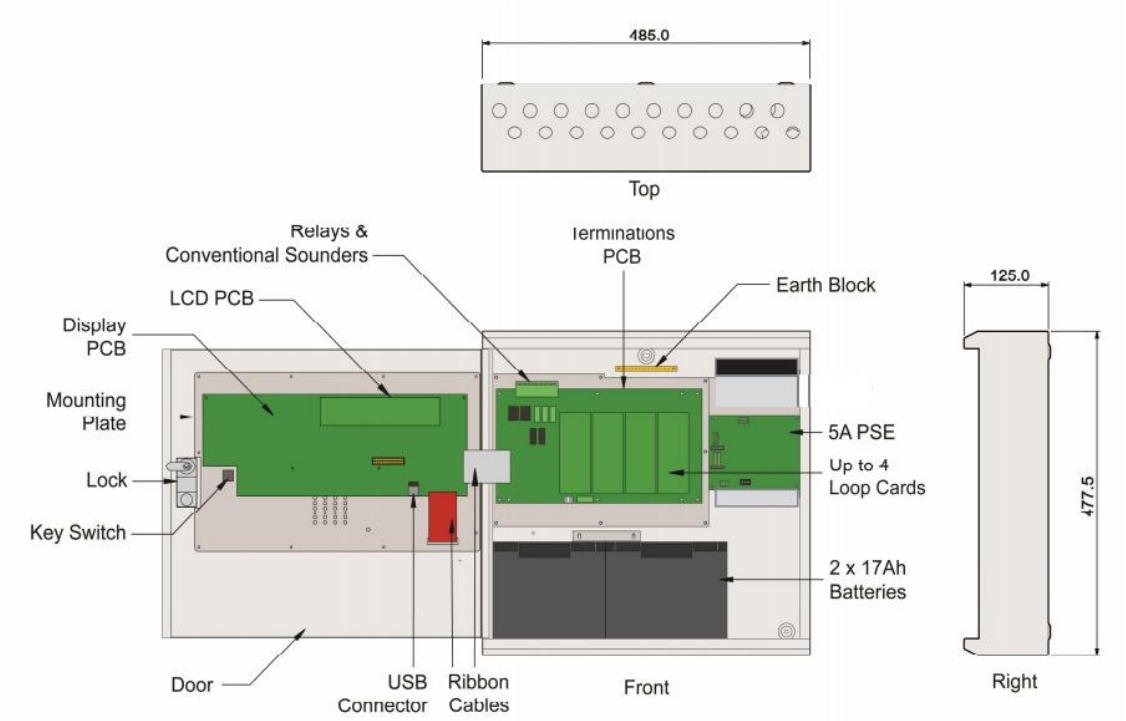


Figure 1: Plan view of A4 panel showing internal view of populated enclosure on the right & inside of hinged door on the left.

The ProFyre A4 panel is an analogue addressable fire alarm control panel designed to EN54 parts 2 & 4. It is available in 1, 2, 3 or 4 loop versions:

ProFyre A4 1 Loop Analogue Addressable Fire Alarm Panel	16-009
ProFyre A4 2 Loop Analogue Addressable Fire Alarm Panel	16-010
ProFyre A4 3 Loop Analogue Addressable Fire Alarm Panel	16-011
ProFyre A4 4 Loop Analogue Addressable Fire Alarm Panel	16-012

Each loop is capable of driving up to 125 devices. All ProFyre addressable devices are compatible with the panel.

In addition to the loop devices, ProFyre A4 has 2 conventional sounder circuits, a fire relay and a fault relay (C, NC & NO).

All loop devices and panel outputs are fully configurable. The cause and effect rules can be set up via the panel or a PC connected to the panel (the latter is described in the Software manual). Cause & Effect rules (also known as Actions) can operate on 4 different levels, i.e. panel, loop, zone and point. For example, A4 can be programmed so that a fire in any zone can activate the sounders in one or more zones. Another example is where a fire detected by a point at a specific address connected to one of the 4 loops can result in an output (i.e. sounder or relay) being activated in another address on any of the loops. Rules that apply specifically to certain types of point devices such as a manual call point or detector can also be programmed.

Instructions on how to configure the panel are given in Sections 11 and 17. The menu command structure is displayed in Section 18.

2.3 ADVANTAGES OF AN ADDRESSABLE FIRE ALARM SYSTEM

The table below lists the main advantages of addressable systems, and how our panels use them.

FEATURE	**PREMIER AL**	**PREMIER AD**	**PROFYRE A4**
UNIQUE ALARM IDENTIFICATION	PANEL, LOOP & ADDRESS	LOOP & ADDRESS	***PANEL, LOOP & ADDRESS***
DEVICE LABEL	20 CHARACTERS	20 CHARACTERS	***22 CHARACTERS***
ZONE LABEL	N/A	N/A	***18 CHARACTERS***
PREALARM	PROGRAMMABLE LEVEL	PRESET @ 45	***N/A***
DETECTOR SENSITIVITY	PROGRAMMABLE (INCLUDING DAY/NIGHT SENSITIVITY)	PRESET @ 55	***PRESET @ 55***
ZONE ALLOCATION	PROGRAMMABLE	SET BY DEVICE ADDRESS	***PROGRAMMABLE***
PROGRAMMING	FULL PROGRAMMABILITY	ZONAL ALARM OR COMMON ALARM ONLY	***FULL PROGRAMMABILITY***
EVENT LOG	YES (200 EVENTS)	YES (2048 EVENTS)	***YES (4096 EVENTS)***

3. DESIGNING THE SYSTEM

The first consideration when designing the fire alarm system is the type or category of fire protection that is required for the building. In the UK this is fully explained in the British Standard BS 5839-1:2002 + A2:2008. This contains guidance on how many smoke detectors, heat detectors, call points, sounders etc. should be fitted for the type of coverage that is required.

Next decide on the number of loops of addressable devices that need to be installed. A4 can be fitted with 1 to 4 loops. The maximum loop capacity is 125 devices (also called points or addresses).

If the building requires more than 4 x 125 devices, then the control panels can be networked. The network capacity is 64 panels (including repeater panels if required).

All fire alarm systems must be subdivided into zones, which represent the geographical areas of the building. A4 allows any number of devices to be allocated to a zone. However, it is assumed that a zone will not contain more than 32 fire detectors and/or manual call points, since this would correspond to an unacceptably large search area.

Each panel may be configured to have between 1 and 20 zones.

Although a fire alarm system has to be subdivided into zones, the cause and effect actions applicable to A4 can be based on other groupings as well as zones. The other groupings are panels, loops and points. Cause and effect is described in the Section 17.

In order to gain the maximum benefits from A4, it is worth considering the types of sounder that can be connected to the system before getting to the cause and effect configuration stage. These sounders and their respective advantages / disadvantages are explained in Section 8.

Whenever possible, give each device as descriptive a label as possible. The better the description, the easier it is to locate in the event of an alarm. The panel allows 22 characters. It may be necessary to use abbreviations to achieve the required label.

Keep the design of the system, and any changes to it well documented. This makes it easier to trace any configuration errors during installation & commissioning.

4. FIRST FIX (FIRE ALARM CONTROL PANEL, CABLE & DEVICE BASES)

4.1 LOCATING THE FIRE ALARM CONTROL PANEL

The control panel should be installed in accordance with the following recommendations:-

- The panel should be close to the main entrance of the building, so that it can be viewed by any fire-fighting personnel entering the building.
- It should be fitted to a sturdy wall that will not flex unnecessarily.
- It should be mounted at eye level, in order for it to be viewed without need of a ladder.
- It should be installed in a dry, weatherproof place, preferably NOT in direct sunlight.
- It should be easily accessible, so that the responsible person can perform their regular fire alarm checks.

4.2 RECOMMENDED CABLE TYPES AND THEIR LIMITATIONS

All wiring must be installed to meet BS5839: Pt1: 2002 + A2:2008 and BS 7671:2008 (IEE Wiring Regulations) standards. Other National standards of fire alarm system installation should be adhered to where applicable.

Screened cables should be used throughout the installation to help shield the Panel from outside interference and ensure EMC compatibility.

The two categories of cable according to BS5839: Pt1: 2002 + A2:2008, Clause 26 “Fire Detection and Alarm Systems for Buildings (Code of Practice for System Design, Installation and Servicing)” are:

- Standard fire resisting cable – to PH30 classification of EN 50200 (including the 30 minute survival time of Annex E)
- Enhanced fire resisting cable – to PH120 classification of EN 50200 (including the 120 minute survival time of BS 8434-2)

(Note that all cables should be at least 1mm2 cross section)

On the ProFyre A4 Panel the general recommendation would be to use standard fire resistant cable, such as , FP200 or an equivalent. These cables are screened, and will provide good EMC shielding when properly grounded at the panel. Certain system specifications may demand the use of a particular type of cable and due regard should be paid to this fact. For non-BS5839 installations, other cable types may be suitable.

Depending on the environment, the cables may need mechanical protection (such as a conduit).

4.3 MAINS WIRING RECOMMENDATIONS

The Mains supply to the FACP is fixed wiring, using **Fire resisting** 3-core cable (Between 1 mm² and 2.5mm²), fed from an isolating double pole switch fused spur, fused at 3A. **IT SHOULD NOT BE CONNECTED THROUGH AN RCD.** This should be secure from unauthorised operation and be marked ‘FIRE ALARM: DO NOT SWITCH OFF’. The supply must be exclusive to the Fire Panel. **MAKE SURE ANY SPARE ENTRY HOLES ARE COVERED WITH THE GROMMETS PROVIDED.**

For information on how to connect Mains to the Panel’s Power Supply PCB, see Section 6.

Also refer to rating information on the mains cover inside the FACP.

5. MOUNTING THE FIRE ALARM CONTROL PANEL

The ProFyre A4 comes with many cable entry holes. If another entry hole is required, it is strongly recommended that the panel door is removed to avoid accidental damage. Also, the back plate which holds the loop cards and power supply should be removed and stored in a safe place. This would also help while fixing the back box to the wall.

5.1 PLANNING CABLE ENTRY

Fig.2 below shows the location of the cable entries to facilitate planning of wiring to be brought to the panel.

The grommets can be easily removed by a push from inside the control panel box.

If a grommet is removed, fill the hole with a brass cable gland. If any knockout is removed, but subsequently not used, it should be covered up.

The 230V AC Mains cable must be fed into the enclosure via one of the cable entries at the top right corner of the back box. (Refer to “Connecting the Mains Power” in Section 6.1).

5.2 FIXING THE BACK BOX TO THE WALL

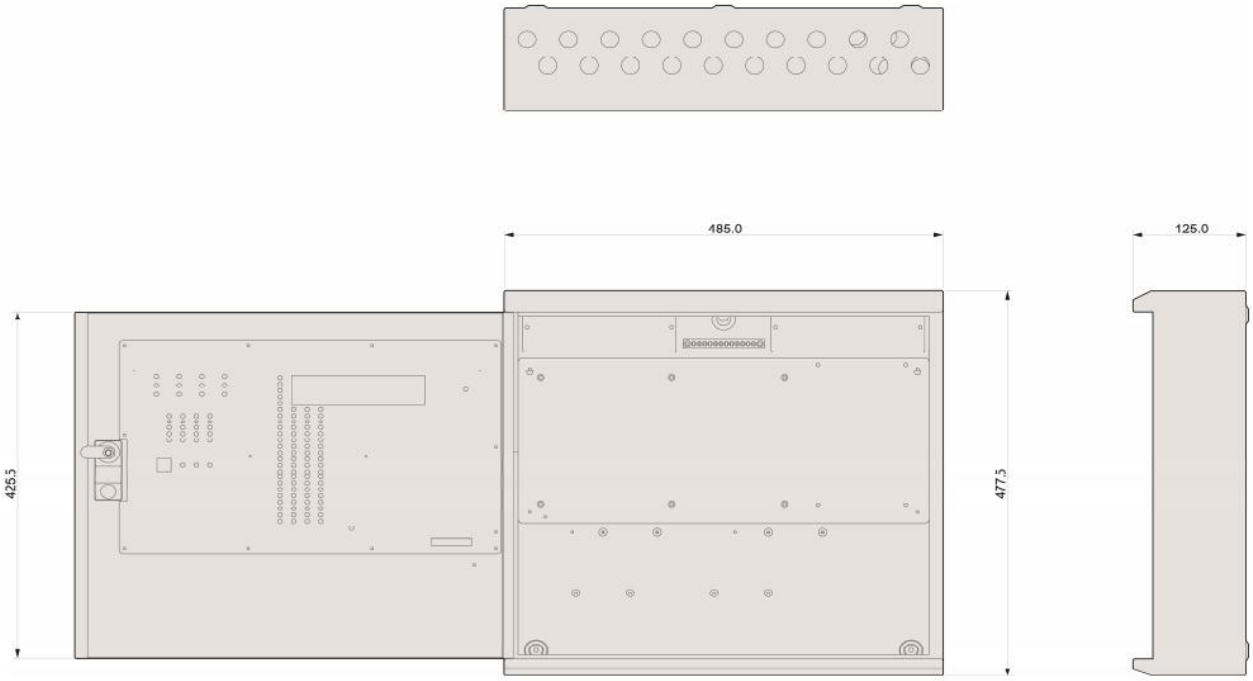


Figure 2: Plan view inside the enclosure without PCBs. Side view for surface installation. (Dimensions: mm)

Fix the enclosure to the wall using the three mounting holes provided (2 circular holes near the bottom of the rear face and one 'keyhole' near the top of the rear face).

Check the build and condition of the wall to decide a suitable screw fixing. The mounting holes are designed for No 8 roundhead or countersunk woodscrews (or similar). Remove any debris from the enclosure. Take care not to damage the FACP during installation.

5.3 ADDRESSABLE LOOPS & DEVICE BASES

These are covered in more detail in Section 7. At this stage it is important to remember devices (e.g. detectors, call points, sounders etc.) should not be fitted to device bases yet, if a high voltage “Megger” type tester is to be used to check for continuity of the loop wiring.

6. CONNECTING MAINS & BATTERY POWER

6.1 CONNECTING THE MAINS POWER

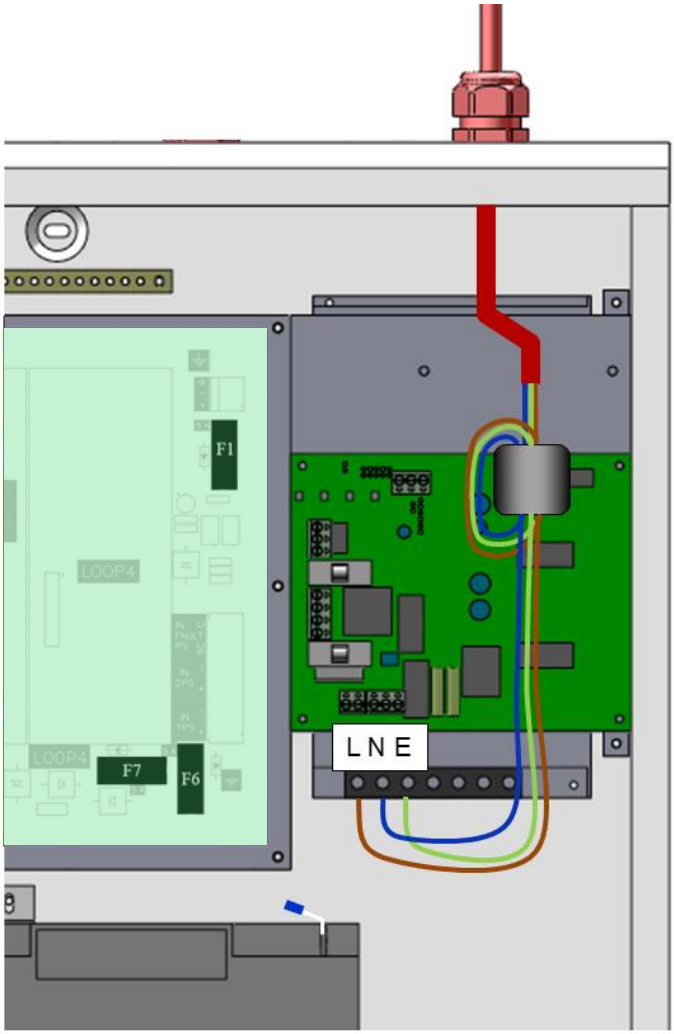


Figure 3: Power Supply PCB layout and Mains connection details

The panel should be connected to mains supply by a 3A rated spur to the fuse box with 1mm2 to 2.5mm2 3-core cable. Nothing else should be connected to this supply. The cable should be fire resistant. NB It is recommended that the mains cable should pass twice through the ferrite supplied with the panel, to improve the panel's immunity to electromagnetic interference. The ferrite should be positioned between the mains entry port and the power supply cage.

The AC Live (L), Earth (E) and Neutral (N) connections are marked on the power supply cage (top right of Figure 3). It is essential that the mains Earth cable is connected to the PSU's Earth terminal. The incoming mains cable should be kept separate from the loop cables to help minimise mains interference.

Once the mains is connected, the panel door should be closed BEFORE turning on the mains power. This will protect the installer from the chance of receiving an electric shock.

MAKE SURE ANY SPARE ENTRY HOLES ARE COVERED WITH THE PLASTIC GROMMETS PROVIDED

It is advisable to apply power to the panel before connecting any devices, to check for correct operation, and to familiarise yourself with the fire alarm panels controls.

6.2 CONNECTING THE BATTERIES

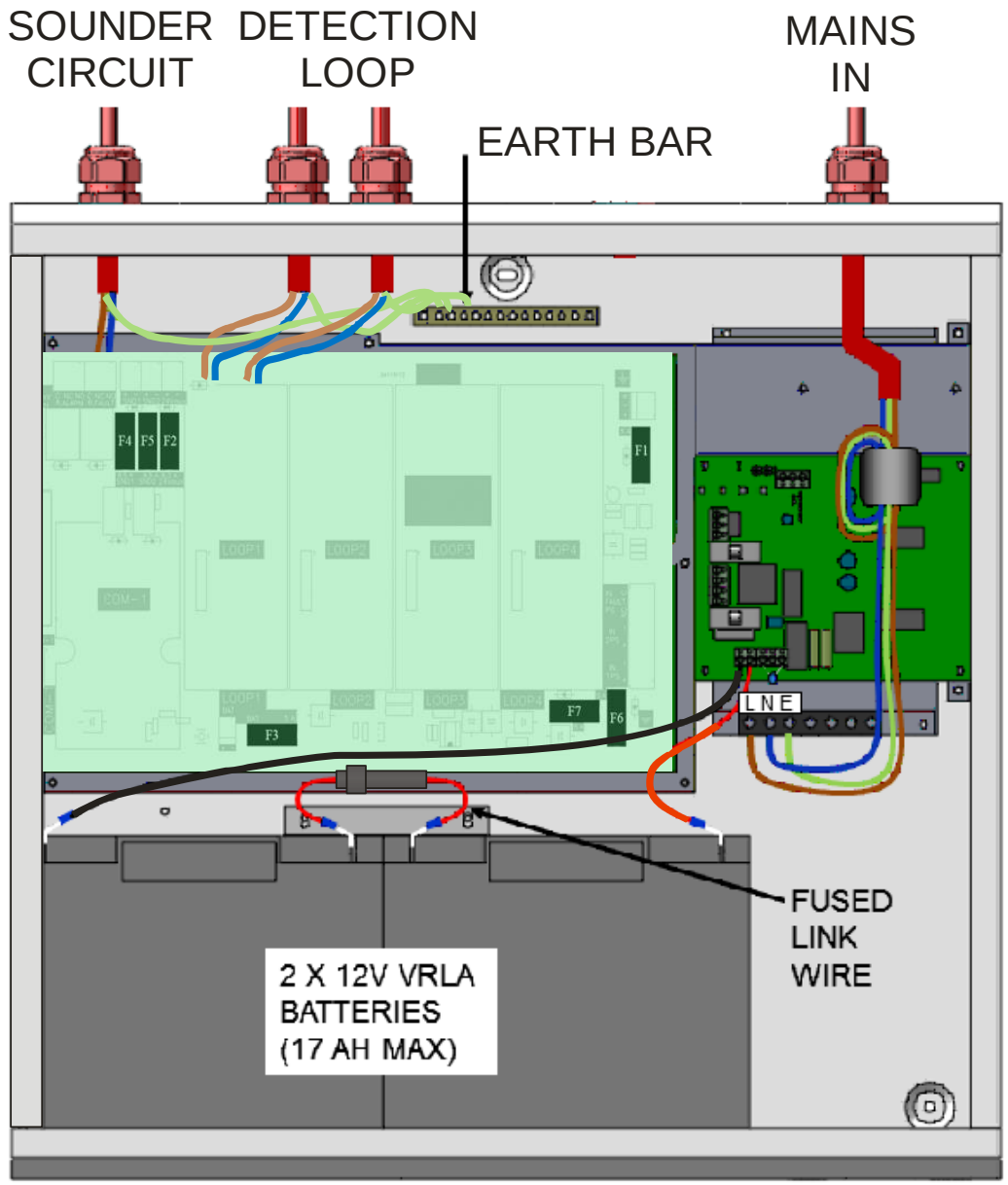


Figure 4: Battery location and connection details.

To calculate the exact requirement, use the equation in section 20. STANDBY BATTERY REQUIREMENTS.

The two batteries are wired in series.

The **+ve** of one battery is connected to the **red** battery lead.

The **–ve** of the other battery is connected to the **black** battery lead.

The –ve of the first battery is connected to the +ve of the second battery using the link wire supplied.

The battery leads will be factory-fitted to either the 5A PSE or to the motherboard (depending upon which version of the panel has been supplied).

Recommended Battery Types:
Small / Lightly loaded systems – Powersonic 12V, 7 Ah; Heavily loaded systems, or systems requiring longer stand by – Powersonic 12V 17 Ah. Other makes and sizes of battery may be suitable. Calculate the standby requirements to determine the most suitable size of battery

7. ADDRESSABLE LOOP WIRING

The ProFyre A4 can be fitted with between 1 and 4 addressable loop cards. One addressable loop can be connected to each loop card. Addressable detectors, addressable call points, addressable loop powered sounders and several other interface units can be fitted to these loops. A MAXIMUM OF 125 ADDRESSES CAN BE CONNECTED TO EACH LOOP. We recommend that the first and last devices on a loop have isolator bases fitted. Also the last device on each zone should have an isolator fitted. This is to prevent a short circuit fault in one zone affecting another zone. The screen cable at each end of the loop (not shown below) must be connected to the loop card's earth terminal.

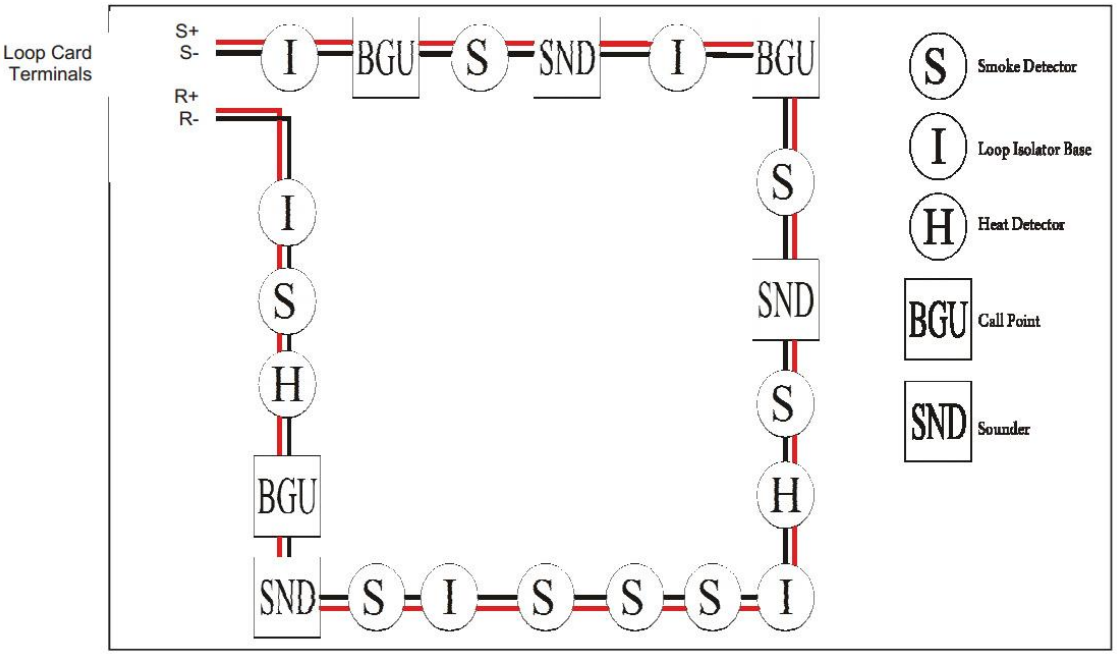
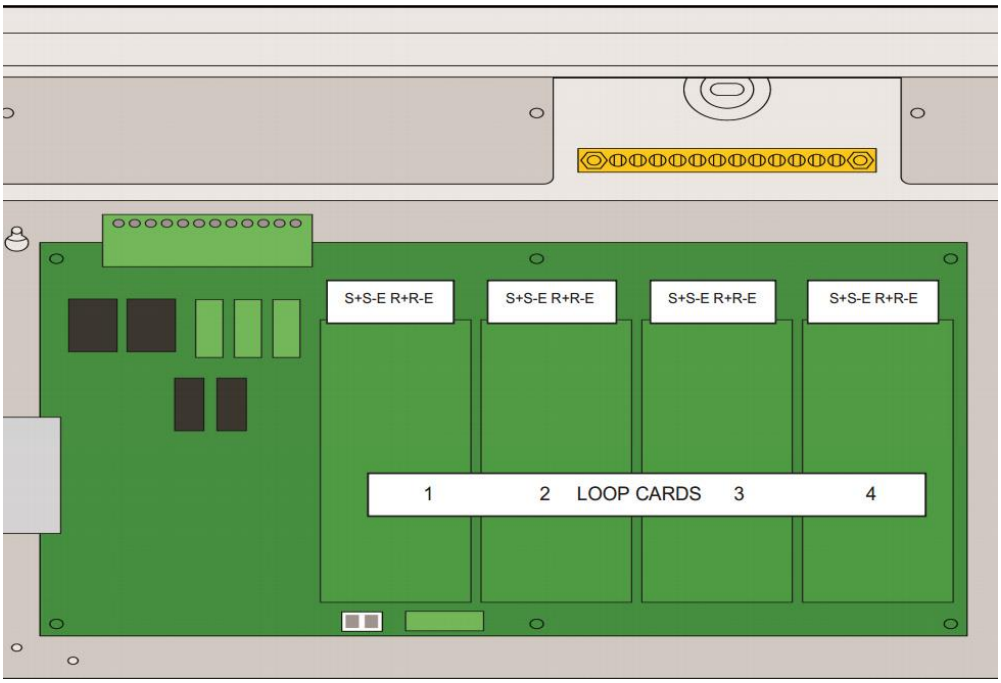


Figure 5: Example of addressable loop wiring (top) & connections to loop cards (bottom)



A maximum of 64 sounders are permitted on each loop (which can be either stand-alone sounders or sounders in the bases of detectors. A MAXIMUM OF 125 DEVICES CAN BE CONNECTED TO EACH LOOP, WITH ADDRESSES 1 TO 125 WHICH CAN OCCUR IN ANY ORDER. Address 126 has a special use. It is not the address of any physical device, but is used for common base sounders (see Section 8).

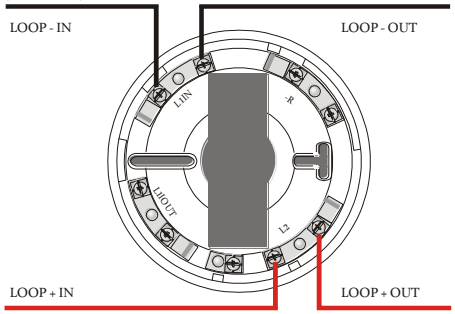
Short circuit isolators should be used to prevent losing the whole loop in the event of a single short circuit fault. They should be fitted to each zone boundary, such that any short circuit will only affect the devices in 1 zone.

Pre-Commissioning Cable Checks

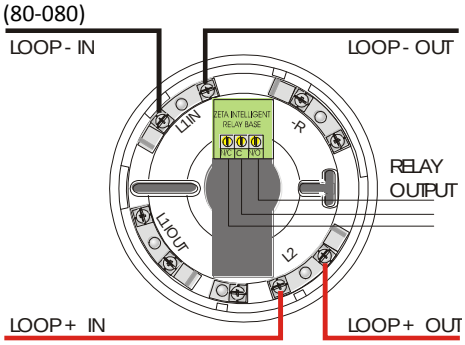
- +ve in to +ve out less than 24 ohms.
- -ve in to -ve out less than 24 ohms (may need to temporarily disable isolators to measure).
- +ve to –ve greater than 500k ohm.
- +ve to Earth greater than 1M ohm.
- -ve to Earth greater than 1M ohm.
- +ve to –ve less than 50 mV pickup (on AC & DC scales).

7.1 SPECIFIC DEVICE WIRING INSTRUCTIONS

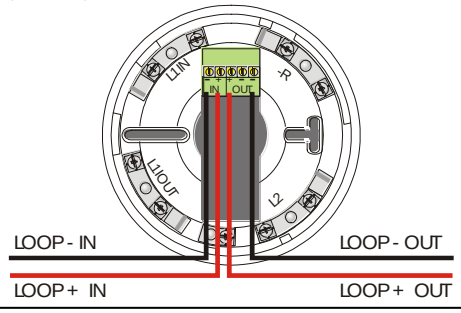
ProFyre Common Base
(80-050)



ProFyre Addressable Detector Relay Base
(80-080)



ProFyre Loop Isolator Base
(80-090)



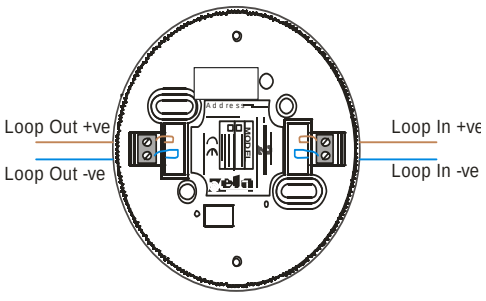
Note that on the ProFyre Loop Isolator Base, the loop wiring connects to the terminal block on the PCB and NOT to the Base Spring Screws.

The terminals are marked + & - in, and +,- &- out.

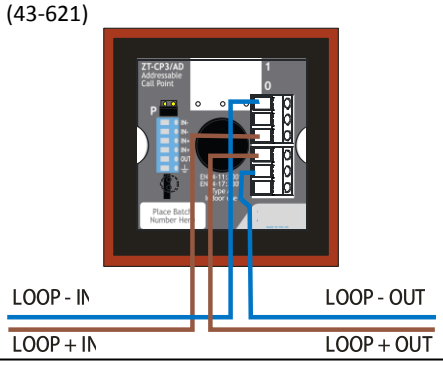
The second –ve contact can be used during commissioning to check the loop integrity.

(Connect the –in to the spare – out. Repeat for all isolators. Measure –ve line resistance with a DVM. Return the –in cable to its original terminal block when tests completed.)

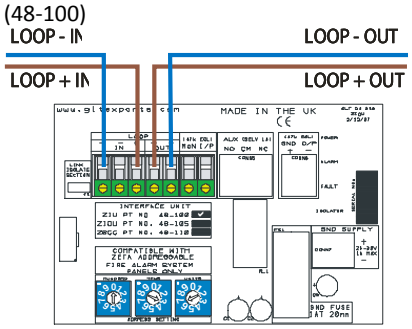
ProFyre Addressable Common Sounder Base
(42-510)



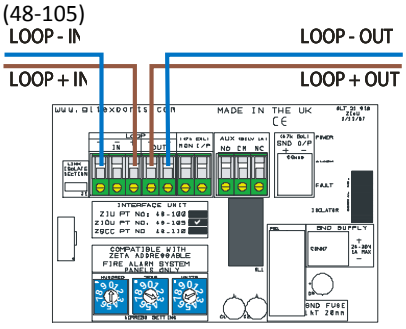
ProFyre Manual Call Point (Resettable)
(43-621)



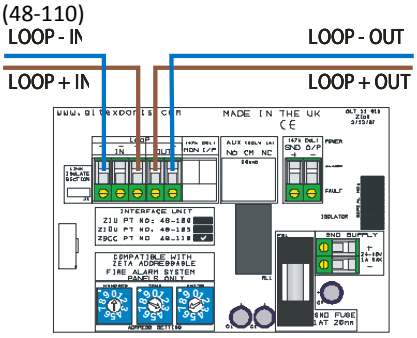
ProFyre Input Unit
(48-100)



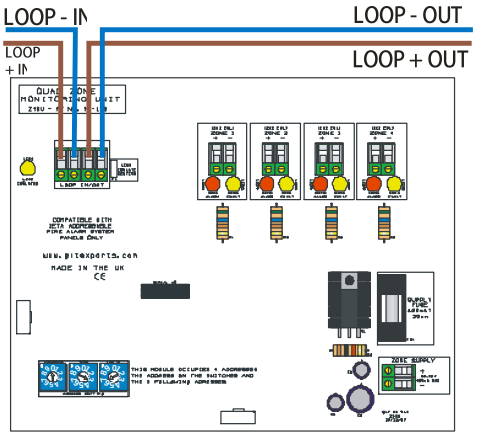
ProFyre Input Output Unit
(48-105)



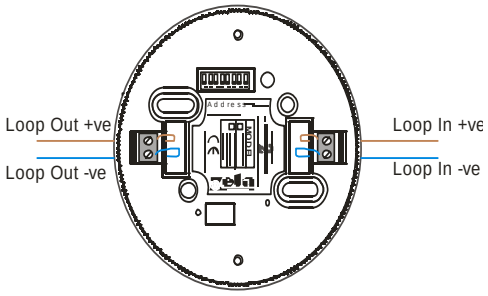
ProFyre Sounder Controller Circuit
(48-110)



ProFyre Zone Monitoring Unit



Securetone 2 Addressable Sounder
(42-520)
NB Flying leads (not shown) are for connection to detector base when used as base sounder.



7.2 LIST OF LOOP DEVICES AND ASSOCIATED EQUIPMENT

DEVICE TYPE	PRODUCT CODE	DEVICE
ProFyre Extra Addressable Detectors		
	16-050	ProFyre Extra Addressable Optical Smoke Detector
	16-053	ProFyre Extra Addressable Combined Smoke & Heat Detector
	16-051	ProFyre Extra Addressable Rate of Rise Heat Detector
	16-052	ProFyre Extra Addressable High-Temperature Fixed Heat Detector
ProFyre Detector Bases		
	12-030	ProFyre Common Base
	80-080	ProFyre Addressable Relay Base
	12-035	ProFyre Addressable Loop Isolator Base
	42-510	ProFyre Addressable Sounder Base
	80-090	ProFyre Addressable Isolator Sounder Base
ProFyre Detector Bases		
	42-510	ProFyre Common Sounder Base
	42-515	ProFyre Common Combined Sounder & Flasher Base
Beam Detectors		
	47-055	ProFyre Addressable Reflective Beam Smoke Detector 50m
	47-056	ProFyre Addressable Reflective Beam Smoke Detector 100m
ProFyre Call Points		
	16-020	ProFyre Addressable Manual Call Point
	16-022	ProFyre Addressable Weatherproof Manual Call Point
Sounders		
	16-160	ProFyre Addressable Maxitone Sounder (Red & White)
	16-162	ProFyre Addressable Maxitone Combined Sounder & Flasher (Red)
	42-520	ProFyre Addressable Securetone 2 Sounder
	42-525	ProFyre Addressable Securetone 2 Combined Sounder & Flasher
	42-530	ProFyre Addressable Securetone 2 Flasher
Electrical & Mechanical Interfaces		
	16-110	ProFyre Input Unit
	16-111	ProFyre Input Output Unit
	16-114	ProFyre Input Output Unit – mains switching
	16-112	ProFyre Sounder Control Module
	48-111	ProFyre Sounder Control Module – 4 circuits
	16-113	Zone Monitor Unit
	48-116	Zone Monitor Unit – 4 zones
	ZTA-DH	ProFyre Loop Powered Door Magnet interface
Conventional Fire Alarm Devices compatible with 48-110 & 48-111		
	12-060	ProFyre Conventional Maxitone Sounder
	12-052	ProFyre Conventional Miditone Sounder
	42-004	ProFyre Conventional Securetone Sounder
	ZIDC/10R	ProFyre Conventional Megatone Sounder
	ZFL2RR	ProFyre Conventional Flasher
	ZLT/8RR	ProFyre Conventional Flasher Sounder
	41-003	ProFyre Conventional 6” Bells
	41-005	ProFyre Conventional 8” Bells

7.3 MAXIMUM LOOP LENGTH RECOMMENDATIONS

With an addressable system, some care must be taken when calculating the appropriate cable gauge for the system. The main limitation is that during an alarm condition (maximum current draw), the voltage at all detectors must be at least 17 Volts with at least 5V of superimposed data signal.

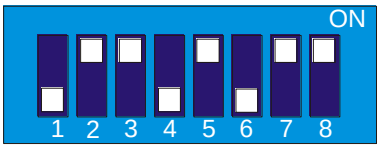
The exact calculation equations are beyond the scope of this manual, because of the distributed load of the sounders on the loop, but the following table gives a rough guide for maximum cable lengths at various current loads for 3 different cable gauges.

MAXIMUM LOOP CURRENT (IN ALARM)	**500 mA**	**400 mA**	**300 mA**	**200 mA**
1mm CSA cable	500 m	625 m	830 m	1250 m
1.5mm CSA cable	750 m	930 m	1250 m	1870 m
2.5mm CSA cable	1000 m	1250 m	1660 m	2500 m

EG. A system with a maximum load of 300mA using 1.5mm cable can have a maximum loop run of 1250 m end to end.

7.4 SETTING THE DEVICE ADDRESS (DETECTORS, CALL POINTS, SOUNDERS & INTERFACE UNITS)

The device Address is set with a dip switch on the rear of the device.



The Address setting is binary, with the ON position being binary 0 , and the OFF position being binary 1. Switch 8 is not used for setting the A4dress, but sometimes has a device specific function. (check instructions that came with the device)

If you are not familiar with binary, check the table on page 14, or use the following rule:

Switch 7 off = Add 64
Switch 6 off = Add 32
Switch 5 off = Add 16
Switch 4 off = Add 8
Switch 3 off = Add 4
Switch 2 off = Add 2
Switch 1 off = Add 1

The example shown would be:
switches 6, 4 & 1 = 32 + 8 + 1 = Address 41

7.5 DIP SWITCH ADDRESS SETTINGS - FULL TABLE

ADDRESS		SWITCHES							ADDRESS		SWITCHES							ADDRESS		SWITCHES						
		1	2	3	4	5	6	7			1	2	3	4	5	6	7			1	2	3	4	5	6	7
0	=	N	O	T	U	S	E	D	**43**	=	OFF	OFF	ON	OFF	ON	OFF	ON	**86**	=	ON	OFF	OFF	ON	OFF	ON	OFF
1	=	OFF	ON	ON	ON	ON	ON	ON	**44**	=	ON	ON	OFF	OFF	ON	OFF	ON	**87**	=	OFF	OFF	OFF	ON	OFF	ON	OFF
2	=	ON	OFF	ON	ON	ON	ON	ON	**45**	=	OFF	ON	OFF	OFF	ON	OFF	ON	**88**	=	ON	ON	ON	OFF	OFF	ON	OFF
3	=	OFF	OFF	ON	ON	ON	ON	ON	**46**	=	ON	OFF	OFF	OFF	ON	OFF	ON	**89**	=	OFF	ON	ON	OFF	OFF	ON	OFF
4	=	ON	ON	OFF	ON	ON	ON	ON	**47**	=	OFF	OFF	OFF	OFF	ON	OFF	ON	**90**	=	ON	OFF	ON	OFF	OFF	ON	OFF
5	=	OFF	ON	OFF	ON	ON	ON	ON	**48**	=	ON	ON	ON	ON	OFF	OFF	ON	**91**	=	OFF	OFF	ON	OFF	OFF	ON	OFF
6	=	ON	OFF	OFF	ON	ON	ON	ON	**49**	=	OFF	ON	ON	ON	OFF	OFF	ON	**92**	=	ON	ON	OFF	OFF	OFF	ON	OFF
7	=	OFF	OFF	OFF	ON	ON	ON	ON	**50**	=	ON	OFF	ON	ON	OFF	OFF	ON	**93**	=	OFF	ON	OFF	OFF	OFF	ON	OFF
8	=	ON	ON	ON	OFF	ON	ON	ON	**51**	=	OFF	OFF	ON	ON	OFF	OFF	ON	**94**	=	ON	OFF	OFF	OFF	OFF	ON	OFF
9	=	OFF	ON	ON	OFF	ON	ON	ON	**52**	=	ON	ON	OFF	ON	OFF	OFF	ON	**95**	=	OFF	OFF	OFF	OFF	OFF	ON	OFF
10	=	ON	OFF	ON	OFF	ON	ON	ON	**53**	=	OFF	ON	OFF	ON	OFF	OFF	ON	**96**	=	ON	ON	ON	ON	ON	OFF	OFF
11	=	OFF	OFF	ON	OFF	ON	ON	ON	**54**	=	ON	OFF	OFF	ON	OFF	OFF	ON	**97**	=	OFF	ON	ON	ON	ON	OFF	OFF
12	=	ON	ON	OFF	OFF	ON	ON	ON	**55**	=	OFF	OFF	OFF	ON	OFF	OFF	ON	**98**	=	ON	OFF	ON	ON	ON	OFF	OFF
13	=	OFF	ON	OFF	OFF	ON	ON	ON	**56**	=	ON	ON	ON	OFF	OFF	OFF	ON	**99**	=	OFF	OFF	ON	ON	ON	OFF	OFF
14	=	ON	OFF	OFF	OFF	ON	ON	ON	**57**	=	OFF	ON	ON	OFF	OFF	OFF	ON	**100**	=	ON	ON	OFF	ON	ON	OFF	OFF
15	=	OFF	OFF	OFF	OFF	ON	ON	ON	**58**	=	ON	OFF	ON	OFF	OFF	OFF	ON	**101**	=	OFF	ON	OFF	ON	ON	OFF	OFF
16	=	ON	ON	ON	ON	OFF	ON	ON	**59**	=	OFF	OFF	ON	OFF	OFF	OFF	ON	**102**	=	ON	OFF	OFF	ON	ON	OFF	OFF
17	=	OFF	ON	ON	ON	OFF	ON	ON	**60**	=	ON	ON	OFF	OFF	OFF	OFF	ON	**103**	=	OFF	OFF	OFF	ON	ON	OFF	OFF
18	=	ON	OFF	ON	ON	OFF	ON	ON	**61**	=	OFF	ON	OFF	OFF	OFF	OFF	ON	**104**	=	ON	ON	ON	OFF	ON	OFF	OFF
19	=	OFF	OFF	ON	ON	OFF	ON	ON	**62**	=	ON	OFF	OFF	OFF	OFF	OFF	ON	**105**	=	OFF	ON	ON	OFF	ON	OFF	OFF
20	=	ON	ON	OFF	ON	OFF	ON	ON	**63**	=	OFF	OFF	OFF	OFF	OFF	OFF	ON	**106**	=	ON	OFF	ON	OFF	ON	OFF	OFF
21	=	OFF	ON	OFF	ON	OFF	ON	ON	**64**	=	ON	ON	ON	ON	ON	ON	OFF	**107**	=	OFF	OFF	ON	OFF	ON	OFF	OFF
22	=	ON	OFF	OFF	ON	OFF	ON	ON	**65**	=	OFF	ON	ON	ON	ON	ON	OFF	**108**	=	ON	ON	OFF	OFF	ON	OFF	OFF
23	=	OFF	OFF	OFF	ON	OFF	ON	ON	**66**	=	ON	OFF	ON	ON	ON	ON	OFF	**109**	=	OFF	ON	OFF	OFF	ON	OFF	OFF
24	=	ON	ON	ON	OFF	OFF	ON	ON	**67**	=	OFF	OFF	ON	ON	ON	ON	OFF	**110**	=	ON	OFF	OFF	OFF	ON	OFF	OFF
25	=	OFF	ON	ON	OFF	OFF	ON	ON	**68**	=	ON	ON	OFF	ON	ON	ON	OFF	**111**	=	OFF	OFF	OFF	OFF	ON	OFF	OFF
26	=	ON	OFF	ON	OFF	OFF	ON	ON	**69**	=	OFF	ON	OFF	ON	ON	ON	OFF	**112**	=	ON	ON	ON	ON	OFF	OFF	OFF
27	=	OFF	OFF	ON	OFF	OFF	ON	ON	**70**	=	ON	OFF	OFF	ON	ON	ON	OFF	**113**	=	OFF	ON	ON	ON	OFF	OFF	OFF
28	=	ON	ON	OFF	OFF	OFF	ON	ON	**71**	=	OFF	OFF	OFF	ON	ON	ON	OFF	**114**	=	ON	OFF	ON	ON	OFF	OFF	OFF
29	=	OFF	ON	OFF	OFF	OFF	ON	ON	**72**	=	ON	ON	ON	OFF	ON	ON	OFF	**115**	=	OFF	OFF	ON	ON	OFF	OFF	OFF
30	=	ON	OFF	OFF	OFF	OFF	ON	ON	**73**	=	OFF	ON	ON	OFF	ON	ON	OFF	**116**	=	ON	ON	OFF	ON	OFF	OFF	OFF
31	=	OFF	OFF	OFF	OFF	OFF	ON	ON	**74**	=	ON	OFF	ON	OFF	ON	ON	OFF	**117**	=	OFF	ON	OFF	ON	OFF	OFF	OFF
32	=	ON	ON	ON	ON	ON	OFF	ON	**75**	=	OFF	OFF	ON	OFF	ON	ON	OFF	**118**	=	ON	OFF	OFF	ON	OFF	OFF	OFF
33	=	OFF	ON	ON	ON	ON	OFF	ON	**76**	=	ON	ON	OFF	OFF	ON	ON	OFF	**119**	=	OFF	OFF	OFF	ON	OFF	OFF	OFF
34	=	ON	OFF	ON	ON	ON	OFF	ON	**77**	=	OFF	ON	OFF	OFF	ON	ON	OFF	**120**	=	ON	ON	ON	OFF	OFF	OFF	OFF
35	=	OFF	OFF	ON	ON	ON	OFF	ON	**78**	=	ON	OFF	OFF	OFF	ON	ON	OFF	**121**	=	OFF	ON	ON	OFF	OFF	OFF	OFF
36	=	ON	ON	OFF	ON	ON	OFF	ON	**79**	=	OFF	OFF	OFF	OFF	ON	ON	OFF	**122**	=	ON	OFF	ON	OFF	OFF	OFF	OFF
37	=	OFF	ON	OFF	ON	ON	OFF	ON	**80**	=	ON	ON	ON	ON	OFF	ON	OFF	**123**	=	OFF	OFF	ON	OFF	OFF	OFF	OFF
38	=	ON	OFF	OFF	ON	ON	OFF	ON	**81**	=	OFF	ON	ON	ON	OFF	ON	OFF	**124**	=	ON	ON	OFF	OFF	OFF	OFF	OFF
39	=	OFF	OFF	OFF	ON	ON	OFF	ON	**82**	=	ON	OFF	ON	ON	OFF	ON	OFF	**125**	=	OFF	ON	OFF	OFF	OFF	OFF	OFF
40	=	ON	ON	ON	OFF	ON	OFF	ON	**83**	=	OFF	OFF	ON	ON	OFF	ON	OFF	**126**	=	N	O	T	U	S	E	D
41	=	OFF	ON	ON	OFF	ON	OFF	ON	**84**	=	ON	ON	OFF	ON	OFF	ON	OFF	**127**	=	N	O	T	U	S	E	D
42	=	ON	OFF	ON	OFF	ON	OFF	ON	**85**	=	OFF	ON	OFF	ON	OFF	ON	OFF									

8. SOUNDERS AND OUTPUTS

The Sounders* in Sections 8.1 to 8.5 can be directly or indirectly connected to one of the 4 loops on ProFyre A4:

8.1 ADDRESSABLE STAND-ALONE SOUNDERS

This type of sounder takes one of the 125 addresses available on each loop. The address is selected via DIP switches 1 to 7. It can be activated individually, or in groups related to its zone number, loop number or panel number (as determined by the cause and effect programmed). An example of this type of sounder is the ProFyre Maxitone Addressable Sounder

8.2 ADDRESSED SOUNDER BASE

This consists of an addressable sounder in the base of an addressable detector. The sounder and detector are set to different addresses, i.e. two devices are located at the same position on a loop but occupy two addresses. The correct operation of the dual-addressed detector / sounder combination requires that DIP switch 8 of the sounder must be ON. A Securetone 2 Sounder can be used as an addressed sounder base or, with the detector removed, as a stand-alone addressable sounder.

8.3 ASSOCIATED SOUNDER BASE

There are 2 types of associated sounder base:

a) This is the same combination of base sounder and detector as in 8.2 above, but this time DIP switch 8 is switched OFF, and the address of the sounder in the base must be set to be the same as that of the detector. In this case the sounder is hidden from the panel, as it does not have its own address, and the sounder will remain silent until the panel is told of its presence. To tell the panel that a detector has an associated sounder, follow the commands that configure a detector's remote indicator (see Section 11.10). The sounder will now operate when the START SOUNDERS button is pressed, or when the corresponding detector's address is part of a "cause & effect" output.

b) There is another kind of base sounder which interfaces with a conventional detector. This is called the Securetone Micro Addressable Sounder. It contains DIP switches to set its address, and a jumper connector which can be set to either the smoke detector position or the heat detector position, depending on the type of conventional detector which is connected. When the detector is triggered, the panel indicates a fire at the address allocated to the sounder, and displays the type of detector at this address. As with 8.3 a), the sounder will not operate unless the remote output is configured.

8.4 COMMON SOUNDER BASE

The common sounder base is connected to an addressable detector, but does not take the detector's address. Common sounders are allocated an address of 126 and are placed in Zone 1. So if the panel is configured to turn on Zone 1 outputs during an alarm, all common sounders will be activated.

There is also a Loop Common Sounder option. Instead of common sounders on all loops being activated as above, it is possible to select individual loops for common sounder operation. If switched off, the common sounders on that loop will not sound during an alarm (see also Section 18.2).

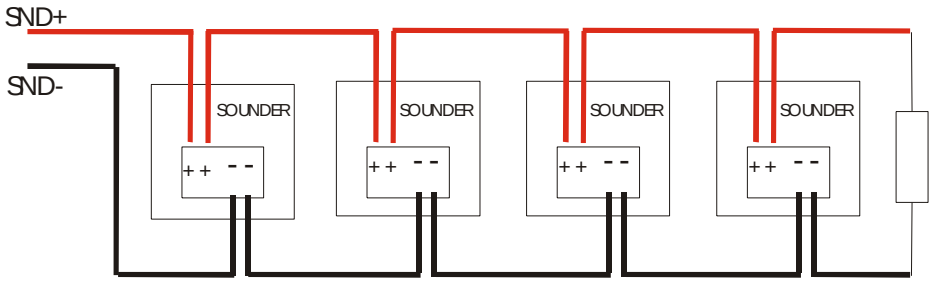
8.5 ADDRESSABLE SOUNDER CIRCUIT CONTROLLER

The ProFyre addressable sounder circuit controllers can be used to connect one or four conventional sounder circuits, respectively, to one address on the loop. It needs external power to be supplied from a suitable 24 V power supply.

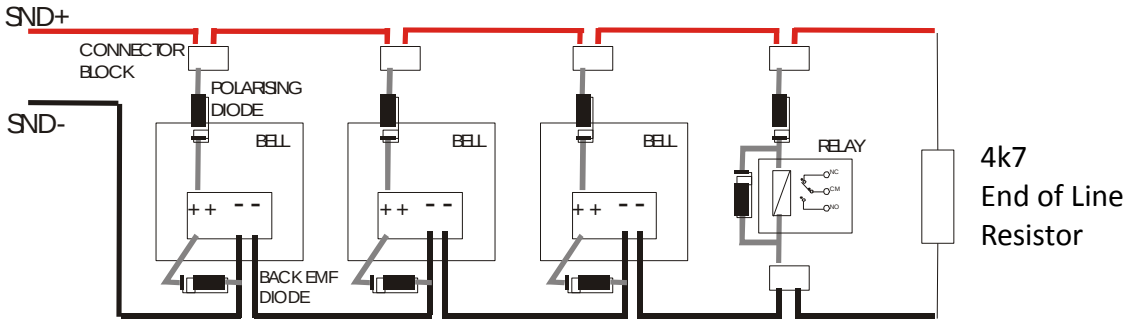
8.6 PCB CONVENTIONAL SOUNDER CIRCUITS

The terminations PCB has 2 conventional sounder circuit outputs, with a maximum capacity of 450 mA each. Please note that conventional sounders should be wired as shown in the diagram below:

*The descriptions of sounders in this section also apply to flashers and combined sounder / flashers.



Note: If non-polarised alarm devices (e.g. some types of old mechanical bell, or a relay) are used, then a diode will have to be placed in line with the device to enable fault monitoring. They may also need a back EMF protection diode. (symptoms: Chattering sounder relays that don't turn off).



8.7 ADVANTAGES AND DISADVANTAGES OF DIFFERENT SOUNDER TYPES

SOUNDER TYPE	ADVANTAGE	DISADVANTAGE
Conventional	Wide range of devices. Devices tend to be cheaper. Immediate start / stop. No quiescent current.	Needs extra cabling. Always configured as common sounders.
Stand-Alone Addressable or Addressed Sounder Base	No extra cabling. Individually started.	Tends to be more expensive. Maximum 64 per loop. Quiescent current relatively high. Uses device address.
Associated (with own address)	No extra cabling. Individually started.	4-8 second start & stop time. Uses device address. Needs detector present to operate. Does not operate during sounder test mode.
Associated (at detector address)	No extra cabling. Doesn't occupy own address. Individually started.	Not monitored.
Common Sounder Base	No extra cabling. Doesn't occupy device address. Quick start.	Not monitored. Always configured as common sounders.
Addressable Sounder Circuit Controller	Wide range of devices. Devices tend to be cheaper. Can Add many sounder circuits to system. Sounder circuit can be assigned to zone.	Needs Extra Cabling. Needs External PSU. Quiescent current high. Uses device Address.

8.8 FIRE RELAY (VOLTAGE FREE CHANGEOVER CONTACTS)

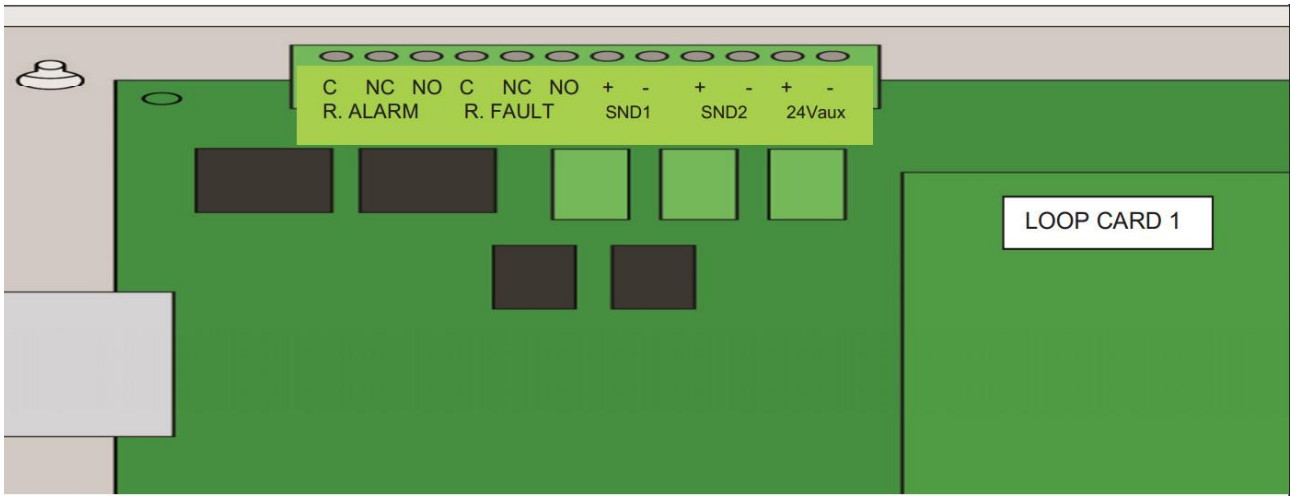


Figure 6: Connections for fire relay, fault relay, conventional sounders and auxiliary DC outputs.

The fire relay (R. ALARM) changes over in any fire condition, and can be used for driving local fire fighting equipment such as sprinkler systems, magnetic door holders, air conditioning shut off, auto diallers etc.

NB In the quiescent condition, there is electrical continuity between C and NC. In the fire condition, there is continuity between C and NO.

8.9 FAULT RELAY (VOLTAGE FREE CHANGEOVER CONTACTS)

The fault relay (R. FAULT) is energised in the quiescent condition. When any type of fault occurs, this is indicated by the fault relay to ensure fail safe operation, even in the event of total power loss. That is, the normally open contact will be closed when there is no fault, and open when there is a fault. This should be taken into account when any device is connected to the fault relay.

8.10 AUXILIARY DC OUTPUT

This 24V DC output is provided to support low power requirements (450mA max). A separate power supply will be required for higher current applications.

9. FIELD DEVICE TERMINATION

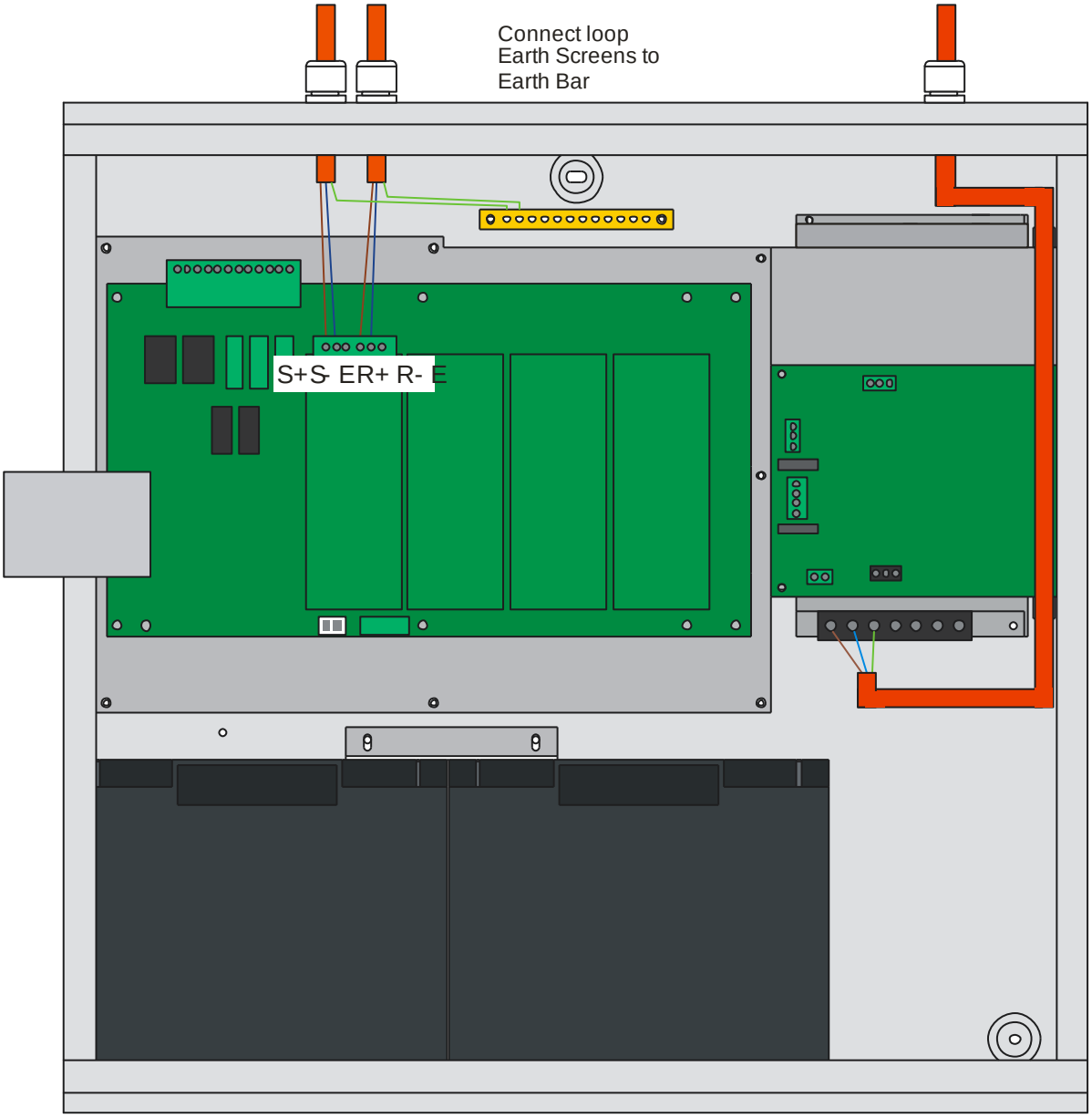


Figure 7: Connecting cables to the A4 panel.

All cables should enter the enclosure via the cable gland, and the cable shields must be connected to the steel EMC cable grounding plate.

Figure 7 illustrates how the mains cable and an addressable loop cable are connected to the panel.

Loop cable screens and the mains earth must be connected as shown in Figure 7. All other screens must be terminated at the brass earthing strip.

MAKE SURE ANY SPARE ENTRY HOLES ARE COVERED WITH THE GROMMETS PROVIDED.

10. NETWORKING

Up to 64 control panels (CIEs) and /or repeater panels can be connected together, i.e. networked. The maximum distance between nodes is 1 km. To set up a network of panels, each panel must be fitted with a network card. The RS485 terminals on the network card are used to connect one or two other panels, using the same type of fire resistant cable with which the fire devices are connected to each panel. So each panel has one input connector and one output connector.

The network can be configured with a ring or bus topology.

10.1 RING NETWORK

In a ring network, each control panel is connected to 2 other control panels to form a ring. This has the same topology as the loops of addressable devices connected to each CIE. This has the advantage that no panels are lost if there is a single break in the network.

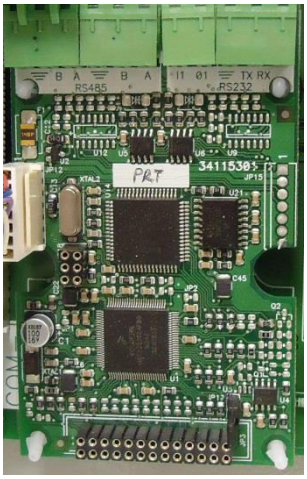
10.2 BUS NETWORK

This is the same as a ring network but wired panel to panel without a return connection from last panel to first panel. It could also be referred to as a radial or spur network. At the final panel in the network, only the input connector is used.

10.3 CONFIGURING THE NETWORK

There are 2 types of network card available for the ProFyre A4 Panel.

STANDARD NETWORK CARD



GATEWAY NETWORK CARD

The Standard Network card provides an RS485 repeater connection, and an RS252 Printer connection.

The Gateway Network Card has an RS485 repeater connection, and a TCP/IP Interface for connection to the Datalog Alarm Manager software.

From the Installer menu, select Network. There are 3 sub-menus:

Node Setup

From here you select whether this node is the controller, or just a normal node. You also assign a network address (Node number). There should always be just one controller on the network.

Network Filter

This determines whether this node reports all network events, or just those from a specific network address

Node search

This should be performed from the controller panel. The panel configures the network and displays the results. The 3 possible configurations are:-

- **Ring –** All nodes are connected as a ring (Recommended configuration). As there are 2 paths to each node, the system will tolerate a break in any of the network cables. It also reports the number of nodes found.
- **Bus –** The nodes are daisy-chained together, with no return from the last node to the first. Here a single cable break would disrupt the network. It also reports the number of nodes found, as well as the Network address of the first and last device on the line.
- **Isolated –** There are no other nodes on the network. (This would be the situation if the network card is used for the printer output, for example).

Note: a STAR topology is not allowed.

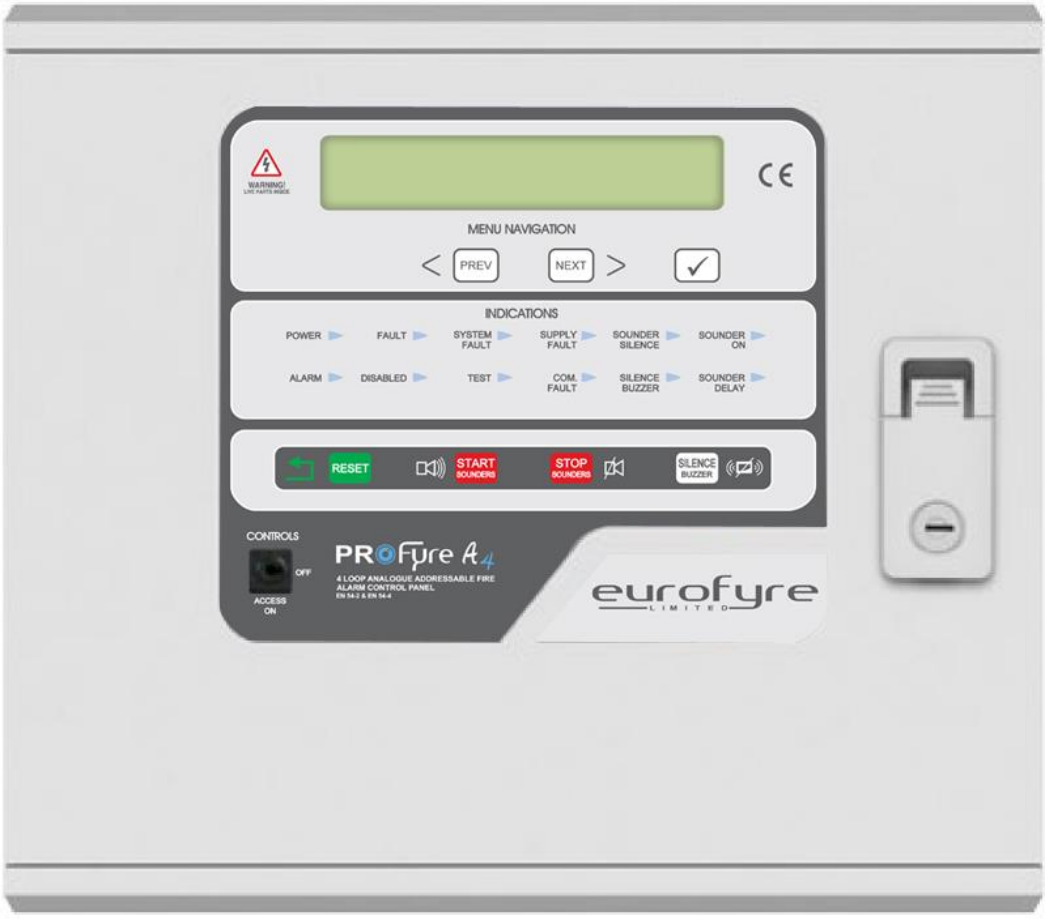
Gateway Network Card

The gateway network card also has a screen to configure its TCP/IP settings. It is accessed by pressing F2 on the Node Setup screen.

It has options for setting the gateway cards TCP-IP address, the default gateway address, and the subnet mask.

These should be set up to allow the host PC to communicate with the panel. Consult the building network administrator for suitable settings.

10.4 REPEATER PANEL



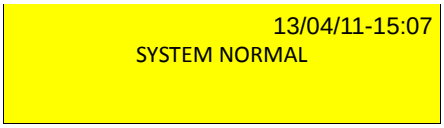
The Repeater Panel is used to remotely indicate the status of the CIE to which it is connected. The general fire and fault LED indications are repeated on the Repeater Panel. An alphanumeric display provides further fire / fault data. The Repeater also has its own control buttons to reset the CIE, start the sounders, stop the sounders, and silence its own internal buzzer.

For further information about the Repeater Panel, and how to connect it and other A4 CIEs onto the network, refer to the A4 Repeater Panel installation manual.

11. INITIAL SET UP

11.1 POWERING UP THE PANEL

After the system has been installed, and the cabling checked and the Addresses of each device set via its DIP switch, connect the 1st loop to loop card 1, the 2nd loop to loop card 2 and so on, depending on the number of loops to be connected to the panel (maximum of 4 loops). Power up the system (mains & batteries). After about 10 seconds it will display SYSTEM NORMAL and the date and time (as shown) and only the green Power LED will be lit. After a few seconds, the panel will report faults for all unconfigured devices, and any other fault / disablement / test conditions.



Turn the keyswitch clockwise to the Controls Enabled Position. The controls Active LED will light.

11.2 POWER SUPPLY

A4 can operate with a power supply which is part of the panel's MOTHERBOARD PCB. Alternatively, it can operate with a CAGE type PSU (see Figure 7) which is fitted as standard next to the motherboard PCB. To ensure that the correct fault monitoring is performed, the installer must indicate whether the MOTHERBOARD PSU or the CAGE PSU is being used, as follows:

1. Turn the keyswitch clockwise to the Controls Enabled Position. The controls Active LED will light.
2. Press any key followed by the level 2 password (default is 2222)
3. Select the option **General**
4. Press **ENTER**
5. Select the option **Power Supply**
6. Toggle between **Motherboard Charger** and **PSU Charger** (using the ▲and ▼symbols until the correct mode is displayed.
7. Press **F1 (Accept)** to accept the selection, or **F4 (Cancel)** to retain the previous PSU mode.

11.3 SETTING TIME AND DATE

Turn the keyswitch clockwise to the Controls Enabled Position. The controls Active LED will light.

Press any key followed by the level 2 password (default is 2222)

Press the ▼key until "Date-Time" is highlighted. Press the **ENTER** key. The date and time can now be entered using the numeric keypad and the directional keys. Press F1 [Accept] to accept a new date and time, or F4 [Cancel] to leave the date / time unchanged. Press Cancel or ◄until the screen shows SYSTEM NORMAL or FAULT.

11.4 CREATING AN INSTALLATION NAME

Turn the keyswitch clockwise to the Controls Enabled Position. The controls Active LED will light.

Press any key followed by the level 2 password (default is 2222)

Press the ▼key until "General" is highlighted. Select "General" and then "Installation Name". You are now able to enter the site reference name of the panel, plus name and telephone number of the installation or maintenance company. The site reference name is displayed on the top line of the SYSTEM NORMAL screen, on the left hand side. The name and phone number of the maintenance company will be alternately displayed with any fault condition of the panel.

11.5 CONFIGURING THE LOOPS

Turn the keyswitch clockwise to the Controls Enabled Position. The controls Active LED will light.

Press any key followed by the level 2 password (default is 2222).

The display changes to the view indicated in the yellow box to the right. Select Loop (by pressing "ENTER" or "√"or "▶") and then Autosearch and choose Loop No. 1 and Accept (by pressing the "F1" key). The panel searches the chosen loop. After the search has reached 100%, the panel displays the number of valid points (i.e. devices) found, and the number of double addresses (i.e. points with the same address), and the number of addresses that have been modified since the last search.

```
                              INSTALLER
Loop     >
Zones    >
Points   >
Actions  >
```

Check that the number of VALID devices is the same as the number of devices actually installed on the loop.

If the panel reports an open or short circuit for a loop, select Autocheck. This checks the number of points found when the loop is checked from the start of the loop (S) and then checked from the end of the loop (R). The Start and Return values indicate the position of the loop fault from each end of the loop.

```
Loop              > Autosearch
                    Autocheck
                    LED Flash Setup
                    Protocol Setup
```

Loop 1 is now configured. Press Accept and then repeat the operations above for the remainder of the loops fitted to the panel.

Press Accept then Cancel then the ◀key until the screen either shows SYSTEM NORMAL or FAULT. The panel will now function as a basic system.

```
SEARCH LOOP REPORT                1
VALID    :115   DOUBLE ADDRESS    :003
CHANGED TYPE          :002
[Accept][Cancel]      [Reports]
```

11.6 ZONE LABELS

The subdivision of a fire alarm system was explained in Section 3, the ProFyre A4 panel being capable of assigning 20 zones. When a fire is enunciated, the zone number in which the fire is located is indicated on the alphanumeric display. In addition to its numerical description, a zone can be identified by a text label, e.g. 3rd floor west ext. If the installer associates a text label with each zone of a fire alarm system, this will be displayed on the LCD when a fire is detected. The maximum length of the zone text label is 18 characters.

To access the menu for selecting Zone Labels:

Turn the keyswitch clockwise to the Controls Enabled Position.

The controls Active LED will light.

```
ZONE EDIT
ZONE     :<XXX>     MODE: ENABLE
TEXT     :[3RD FLOOR WEST EXT]
[-]      [+]      [Points]      [Exit]
```

Press any key followed by the level 2 password (default is 2222).

Select Zone edit, and then the zone number by either using the alphanumeric keypad, or the function keys F1 and F2 to increment or decrement the zone number. Type in the text label between the brackets on the 3rd line of the display. Selecting F3 allows one or more points (i.e. devices) to be added to the loop.

```
ADD POINTS
ZONE     :<XXX>     LOOP : [1]
RANGE: [001]        TO :[001]
[Accept]                      [Exit]
```

The LCD also indicates the current mode of each zone – enabled or disabled.

11.7 ADDRESS LABELS AND ZONES

ProFyre A4 is an addressable panel, i.e. it will indicate the address or location of a fire that has been detected. The address number of each point or device on each loop has already been selected according to its DIP switch setting. The installation engineer must now assign a label or location for each device, e.g. ROOM 107. A maximum of 20 characters can be used for each label. At the same time each point can be allocated to a zone.

To access the menu for selecting Address Labels:

Turn the keyswitch clockwise to the Controls Enabled Position. The controls Active LED will light.

Press any key followed by the Password 2222. Select Points followed by Edit Point. For each point the following data can be entered:

Loop Number, Address Number, Zone Number & the Text Label (e.g. ROOM 107)

The LCD also indicates the MODE of a point, i.e. ENABLED or DISABLED, the analogue value (V) that the device is sending to the panel, and the type. Pressing the F keys below [–] and [+], decreases or increases the address number.

```
LOOP :<1>      ADR :[019]     ZONE:[023]
TYPE :Optical  MODE :ENABLE   V:023
TEXT  :[ROOM 107          ]
[-]                  [+]              [Exit]
```

When a fire is detected, the address label of the device which has been triggered can be displayed by using the keys ▶and ◀to scroll through the list of fires detected and stored by the panel.

11.8 VIEWING DEVICE STATUS

To view the status of any loop device (point):

Turn the keyswitch clockwise to the Controls Enabled Position. The controls Active LED will light.

Press any key followed by the level 1 password (1111 is the default). Next select Point from the menu, followed by Show.

The information displayed is:- Loop, address, zone, point type, mode, analogue value & text label.

NB the same parameters are displayed as in Section 11.7 (Address Labels and Zones). However, Level 1 password control does not allow the zone number and address label to be changed.

For detectors, V is usually about 25 for clean air, and 55 during alarm. Non analogue devices such as call points and I/O Units have a normal value of 16, and an alarm value of 64. They will return a value of less than 8 to report a fault condition.

```
LOOP :<1>      ADR :[105]     ZONE:[016]
TYPE :Optical  MODE :ENABLE   V:025
TEXT  : RESTAURANT -2ND FLOOR
[-]                  [+]              [Exit]
```

The text labels displayed for each addressable point are:

Sounder, Input-Output, Ionisation, Zone, Optical, Opt-Heat, Heat and MCP. Each of these is known as the TYPE of a point or device.

NB Sounder can be a standard loop sounder or a sounder circuit controller for connecting conventional sounders to the loop. Zone is an abbreviation for Zone Monitor Unit, for interfacing conventional detectors or call points to the loop. Opt-Heat is a combined optical and heat detector. Heat can either be a fixed temperature heat detector or a high temperature heat detector.

11.9 LOCATE OR VERIFY A DEVICE

It is possible to send commands to individual devices to turn on their alarm LED. This can be a very useful function when one wants to locate a device or verify its address.

Turn the keyswitch clockwise to the Controls Enabled Position. The controls Active LED will light. Press any key followed by the level 2 password (default 2222). Select Points followed by Toggling LED. Select the loop and address of the point to be checked.

```
LOOP :<001>    ADR :[001]     ZONE:001
TYPE :Optical  MODE :ENABLE
TEXT  : [3RD FLOOR WEST EXT]
[-]                  [+]              [Exit]
```

The [-] and [+] commands can be used to decrement or increment the address of the point being searched for. If the device has a panel controlled alarm LED it will be turned on immediately its address is selected. Scrolling to another device or exiting the menu will automatically turn the LED off.

11.10 REMOTE OUTPUT

The remote output on a detector is used to switch on a connected remote indicator (LED). It is also used to tell the panel that a detector has an associated sounder. Also known as a Platform sounder.

Turn the keyswitch clockwise to the Controls Enabled Position. The controls Active LED will light. Press any key followed by the level 2 password (default 2222). Select Point followed by Platform sounder. Change RMT from 'No' to 'Yes'.

```
LOOP :<001>    ADR :[001]     ZONE:001
TYPE :Optical  MODE :ENABLE   RMT: [YES]
TEXT  : [3RD FLOOR WEST EXT]
[-]                  [+]              [Exit]
```

11.11 PASSWORDS

As described earlier in this section, 2 passwords are required to view and set up the configuration on the A4 panel. These are required to increase the security of a site configuration.

(a) Level 1 or User Passwords (Default 1111)

Authorised users are allowed to view the panel's configuration, status and event logs (see section 16). They can also disable (section 13) and test (section 14) the panel.

Each authorised user can be assigned his own 4-digit Level 1 password by the installation / commissioning engineer. The panel permits up to 31 unique level 1 passwords, i.e. up to 31 people can have their own unique access to Level 1 data. It is recommended that these passwords are assigned during the commissioning of the panel. Changes to these passwords at a later date will require a further site visit by the installation engineer.

The Level 1 password can be changed as follows:

Turn the keyswitch clockwise to the Controls Enabled Position. The controls Active LED will light.

Press any key followed by the level 2 password (default is 2222). Press the ▼key until "General" is highlighted. Select "General" and then "Password". You are now able to enter the password for the 1st authorised user. The LEVEL must be set to 1 (see top right corner).

In the example, the 1st user has been assigned a Password of 4321.

There can be up to 31 user numbers, each with a unique Password.

```
CHANGE PASSWORD   LEVEL: <1>
USER          : [01]
PASSWORD : [4321]
[Accept   ]              [Exit]
```

(b) Level 2 or Installer Password (Default 2222)

Only one level 2 password is permitted by the panel at any time. It is essential that the level 2 password is kept secret from the panel users (and of course the general public). This 4-digit password, which the installation engineer can select and edit, is required to set up the site configuration of a panel.

The Level 2 password can be changed as follows:

Turn the keyswitch clockwise to the Controls Enabled Position. The controls Active LED will light. Press any key followed by the level 2 password (default is 2222). Press the ▼key until "General" is highlighted. Select "General" and then "Password". You are now able to enter the password for the 1st authorised user. The LEVEL must be set to 2 (see top right corner).

The current Level 2 password must be entered before it can be changed to a new password.

```
CHANGE PASSWORD   LEVEL: <1>
USER          : [2222]
PASSWORD : [2468]
[Accept   ]              [Exit]
```

11.12 PROTOCOL SELECTION

The ProFyre A4 panel is capable of running a number of different protocols.

Original ProFyre protocol (Standard), which has:-

- 125 addresses per loop
- 8 basic device types

Panel Coded Protocol (PC-7.1), which has:-

- 125 addresses per loop
- 8 basic device types

(NOTE: A standard device will work with a panel configured as Standard or Panel coded. A panel coded device will not run on a standard panel)

ProFyre II protocol. The new protocol has:-

- 250 addresses per loop

- 256 device types
- Sounder synchronisation
- Plus room for future expansion

Note that no more than 512 detectors and/or call points should be fitted to a single panel in order to comply with EN54

A ProFyre II panel can only run ProFyre II devices.

Due to the differences in the protocol, a ProFyre Mk II system can not be configured through the panel to run standard devices. But it can be configured to do this via a PC. Contact your distributor for further details.

11.13 MISCELLANEOUS

(a) LED Flash Setup

By selecting this function for a specific loop, a device's indicating LED will flash every few seconds.

(b) Printer Setup

The network card for the ProFyre A4 panel has a built in RS232 port. This is intended to be linked to a serial printer such as the Epson LQ300+, or the Maxatec 1014

The serial port can be configured to print selected events live, as they happen, or the user can go to the printer menu and choose to reprint events from a certain date.

The serial port outputs data in 19200,8,n,1 format. The printer should be adjusted to this if it is not already its default setting.

To investigate how the entire menu command structure of the A4 panel interlinks, refer to Section 18. This illustrates the command structure in a menu tree flowchart of the control keys.

12. FIRE ALARM

12.1 INDICATIONS

A fire is indicated on the A4 panel by the COMMON FIRE red LED. The zonal location of the fire is indicated by one of the zonal indication red LEDs. Zonal indication is limited to the first 20 zones of the installation.

Fires in all zones will be indicated on the LCD. An example of the 4 line fire display is shown below:

Line 1 indicates the first zone in fire. In the example, the first alarm was in Zone 3. Zone 3 is the Second Floor.

The 2nd line indicates the most recent zone in fire. The format is the same as line 1. The most recent fire occurred in Zone 5, which is the Fourth Floor.

Line 3 shows the total number of zones in fire and the total number of points / devices in fire.

```
FIRST ALARM: Z003 - SECOND FLOOR
LAST ALARM :  Z005 - FOURTH FLOOR
ZONES IN FIRE:004  POINTS IN FIRE:010
PRESS ◄OR ►TO SCROLL
```

All the points that are in the fire condition can be displayed in turn by using the ◄or ►keys to scroll through the fires. This information is displayed on lines 3 and 4. For example:

In this example, line 3 indicates the 2nd point of the 10 points in fire. Point 2 was triggered at the time 08:10. Point 2 is in Zone 17 (the Stair Well). Point 2 is an Optical detector connected to Panel 2 and Loop 4. Its address is 124.

```
FIRST ALARM:  Z003 - SECOND FLOOR
LAST ALARM :  Z005 - FOURTH FLOOR
002/010-08:10   Z017 – STAIR WELL
Optical     (2.4.124)   -   ROOM 101
```

Note that if the device in alarm is connected to one of the loops of the panel which is indicating the fire, the panel number is not displayed in line 4, i.e. Optical (4.124 - ROOM 101).

12.2 OUTPUTS AND DELAYS

Following the indication of a fire, the panel will activate outputs (i.e. sounders and / or relays) according to the cause and effect rules or ACTIONS that have been programmed (see Section 17). In certain circumstances, the activation of outputs may be delayed whilst the fire is being investigated.

(a) Sounder Delays

If the operation of sounders has been delayed in one or more of the programmed ACTIONS, then this will be indicated by the illumination of the DELAY ON LED (in the SOUNDER STATUS section of LEDs). When a fire has been indicated, the DELAY ON LED remains lit until the longest sounder delay has expired.

During a fire alarm it is possible to override all the sounder delays (at any access level) by pressing button F4, which is labelled [END DELAY], as shown.

The [END DELAY] label is erased from the display when either the longest sounder delay has expired or the sounder delay has been overridden by pressing F4.

```
FIRST ALARM: Z003 - SECOND FLOOR
LAST ALARM :  Z005 - FOURTH FLOOR
ZONES IN FIRE:004  POINTS IN FIRE:010
PRESS ◄OR ►TO SCROLL          [END DELAY]
```

(b) Relay Output Delays

Relay outputs can also be delayed via the cause and effect actions. In this case, no LED is lit to indicate a delay (since this type of output is not mandatory).

NOTE: It is possible to toggle delays on & off via the user menu. If the delay is not working as expected, check in the user menu if the delays have been turned off. (If there are delays to sounders, the sounder delay LED will be lit when the delays are enabled. Delays to relays do not turn on this LED)

12.3 CONTROLS

The panel contains the following mandatory controls. They can only be operated when the key on the front of the panel has been turned clockwise from OFF to CONTROLS ENABLED. The CONTROLS ACTIVE LED indicates that the controls have been enabled.

START / STOP SOUNDERS

This control can be used by authorised personnel to stop or silence the sounders whilst the panel is in the fire alarm condition. This control will alternately stop and start the sounders (i.e. silence and sound the alarms).

SILENCE BUZZER

This control silences the panel's internal buzzer which is always activated when a fire or a fault has been detected.

RESET

After a fire or false alarm has been fully investigated and dealt with, operating this control resets the fire alarm condition. The same control is used to reset from a fault condition.

It is good practice to stop the sounders before resetting the panel. However, pressing the RESET control whilst the sounders are still active, will silence the sounders as well as resetting the fire alarm condition.

OTHER CONTROLS

In addition to the 3 mandatory controls, the keypad also provides:

12 alphanumeric (including ENTER and CANCEL), 6 navigational (▲ ▼ ◄ ►, √, X) and 4 menu functions (F1, F2, F3, F4) keys. Each menu function key corresponds to the function or command label in square brackets which is displayed on the bottom line of the LCD immediately above the function key.

13. DISABLEMENT

To aid commissioning and assist routine maintenance checks, various functions of the A4 fire alarm system can be disabled as described below.

13.1 ZONE DISABLEMENT

When a zone is disabled, the panel will not respond to any fault or fire signals it receives from DETECTORS from that zone.

This might be used if the system requires routine maintenance, and the user needs the rest of the system to continue running, but doesn't want spurious false alarms.

The panel will respond in the usual manner to any events in any non-disabled zones.

Any number of zones can be disabled, but it is good practice to only disable one zone at a time.

A zone can be disabled as follows:

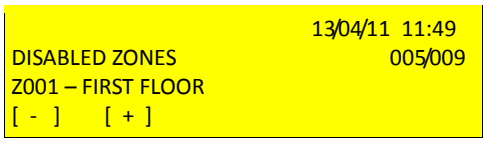
Turn the keyswitch clockwise to the Controls Enabled Position. The controls Active LED will light.

Press any key followed by the Level 1 password (default 1111). Select Zones then Disable. Enter the zone(s) or range of zones to be disabled. Finally select Accept and then Exit.

When zones have been disabled, the General Disablement LED will be lit and also the zonal disablement LEDs (in one or both of the columns labelled FAULT DISABLE TEST). The zonal disablement LEDs only apply to zones 1 to 20.

When one or more zones have been disabled, the main screen on the LCD display changes from SYSTEM NORMAL to DISABLED ZONES, as shown.

In the example, line 2 indicates that a total of 9 zones have been disabled, and the 5th of these is shown on line 3. Zone 1 (Z001) has the text label FIRST FLOOR. The zone no. and text label for each disabled zone can be displayed by pressing the control buttons F1 and F2 which correspond to [-], the previous disabled zone, and [+], the next disabled zone.



Alternatively, up to 10 disabled zones (without text labels) can be displayed in one screen as follows. Select any key followed by Level 1 password (default 1111), and then Zones followed by Show Disabled Zone. Zones are displayed in groups of 10, with the symbol X underneath a zone which has been disabled. The next group of 10 zones can be displayed by pressing the + symbol. The – symbol can be used to go back 10 zones.

To re-enable a disabled zone, repeat the same procedure used for disabling the zone, selecting Enable instead of Disable.

13.2 DEVICE DISABLEMENT

Rather than disable an entire zone, it is often useful to just disable one or more input devices or points (detector, call point, or interface) within a zone, especially if they are malfunctioning and likely to cause a false alarm or repeatedly indicate a fault.

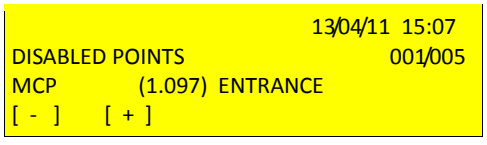
To disable a device / point follow the same procedure as in Section 13.1 but selecting Point instead of Zone, followed by Disable.

Once a device is disabled, the panel ignores any alarms or faults generated by the device.

If all devices in a zone are disabled, the panel will indicate a zone disablement. If subsequently one or more devices are re-enabled then the zone disablement indication will be automatically cancelled.

When one or more points have been disabled, the main screen on the LCD display changes from SYSTEM NORMAL to DISABLED POINTS, as shown.

In the example, line 2 indicates that a total of 5 points have been disabled, and the 1st of these is shown on line 3. The 1st disabled device is an MCP which is located on loop 1 at address 97, with the text label "ENTRANCE". Each disabled point can be displayed by pressing the control buttons F1 and F2 which correspond to [-], the previous disabled point, and [+], the next disabled zone.



Alternatively, up to 10 disabled points (without indicating device type or address) can be displayed on one screen as follows.

Select any key followed by Level 1 password (default 1111), and then Points followed by Show Disabled Points. The menu structure is then the same as for zone disablement.

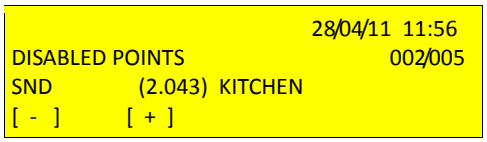
To re-enable a disabled device, repeat the same procedure used for disabling the device, selecting Enable instead of Disable.

13.3 SOUNDER DISABLEMENT

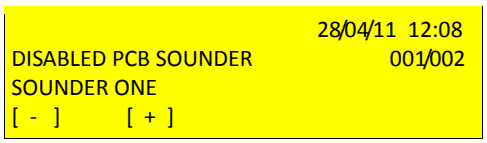
On the A4 Panel, all sounders are disabled together through the User Menu. This affects The conventional sounder circuits, loop sounders, and any Platform (hidden) sounders

When the sounders have been disabled, the Sounders Output Disablements LED will light up.

The LCD will show a list of all the sounders, showing that they are disabled.



It also shows both of the conventional sounder circuits are disabled on the screen on the LCD.



13.4 RELAY DISABLEMENT

Relay outputs can also be disabled. These can either be addressable output units on any of the loops or a PCB output relay (ALARM or FAULT).

TEST MODE

14.1 WHY USE TEST MODE

To aid commissioning and assist routine maintenance check, a non-latching 'one man test' facility is available.

When a detector, manual call point or input unit is triggered on any zone in Test, the Alarm sounders operate for approximately 10 seconds on and then switch off. The triggered device is automatically reset. The panel will enter the fire condition and indicate the address of the fire. The panel automatically resets from the fire condition at the same time as the triggered device, but the LCD indication remains until the panel is manually reset.

If the device is still in the fire condition, e.g. MCP still activated or the analogue value of a detector still above the alarm threshold, the device will be triggered again and the Alarm sounders will operate for a further 10 seconds.

Should an Alarm occur on a zone that is not programmed to test, the Fire Alarm Panel will operate as normal.

14.2 TO PROGRAMME ZONE IN TEST MODE

Turn the keyswitch clockwise to the Controls Enabled Position. The controls Active LED will light.

Press any key followed by the Level 1 password (default1111). Select Zones then Test.

The LCD displays the following:

Enter the range of zones to be put in to test mode. Change [No] to [Yes] if you require the Alarm sounders to operate as described in Section 14.1. If the Sounders are not enabled, a zone of devices can be tested silently. All of the events in 14.1 will occur apart from the sounders turning on and off again after 10 seconds.

```
TEST ZONE
RANGE: <001>     TO              : [001]
ENABLE SOUNDER   :   [No]
[Accept]                         [Exit]
```

Press [Accept]. Note that this is the "SELECT ZONES TO TEST" screen. It is possible to select more than one zone or range of zones to test. So if ENABLE SOUNDER has been changed to [Yes], the panel registers that those zones will be tested with sounder activation, then clears the screen ready for the next entry. (Ie the screen will revert to Zone <001> to <001> Enable sounders [No] when [Accept] is selected.) Finally select [Exit] to leave the Test Zone screen.

NOTE: When Enable Sounders is selected for test mode, the panel only operates the sounders in the zone that gives the alarm test.

When one or more zones are in test mode, the main screen on the LCD display changes from SYSTEM NORMAL to ZONES IN TEST, as shown.

In the example, line 2 indicates that a total of 2 zones have been disabled, and the 1st of these is shown on line 3. Zone 3 (Z003) has the text label THIRD FLOOR. The zone no. and text label for each disabled zone can be displayed by pressing the control buttons F1 and F2 which correspond to [-], the previous disabled zone, and [+], the next disabled zone.

```
                          28/04/11  12:20
ZONES IN TEST                     001/002
Z003 – THIRD FLOOR
[  -  ]      [  +  ]
```

NOTE that if more than one of the disablement or test conditions described in sections 13 and 14, then the condition displayed on the main screen is dependent on the following order of priority:

- DISABLED ZONES (highest priority)
- DISABLED POINTS
- DISABLED PCB SOUNDER
- ZONES IN TEST (lowest priority)

The control button F4 (labelled [NEXT]) can be used to scroll between these conditions.

15. FAULTS

All faults are indicated by a flashing yellow LED.

Faults can be divided into 2 types, “Faults” and “Device Faults”. Device Faults are any fault associated with a particular address on the loop. Faults are everything else, e.g. sounder circuits, power supply etc.

15.1 COMMON FAULT LED

This is a general indicator which flashes whenever any type of fault is present.

15.2 LOOP CONTENTS FAULT FINDING

If the loop contents are different to what was expected, then there two probable causes:

Two or more devices may have the same address setting. This is referred to as a DOUBLE ADDRESS FAULT. If this occurs all devices with the same address will answer at the same time. The panel will not be able to understand the answer it receives. To find devices with the same address:

Press any key followed by the Level 2 password (default 2222). Select Points then Toggling LED. Enter the address which has been set for 2 or more devices. This will cause the indicating LEDs for all devices with this address to flash. Old Call Points, Sounders and some I/O units will not be indicated as they have no panel controlled LED to light up.

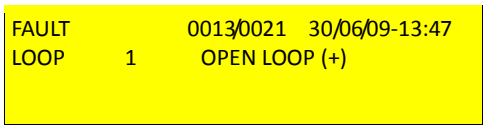
An alternative method to find double addresses is to AUTOSEARCH the loop and then select REPORTS. This gives a TYPE LOOP REPORT, i.e. the total number of each device type found on the loop which was auto-searched. Next by selecting ADDRESSES (button F3), the device type is displayed at each address from 1 to 125 (in groups of 10). Where there is no device present at an address, a blank replaces the device type. A double address is indicated by DOU.

There may be some reversed connections to devices (they are polarity sensitive). The positive core of the loop should be connected to the L2 terminals of the ProFyre detector base, and the negative core to the L1 terminals in the base. Other devices will have their polarity marked accordingly in their bases.

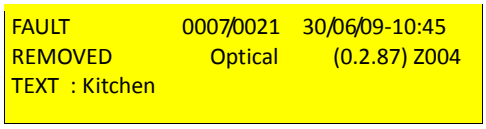
15.3 ZONE FAULTS

There are several reasons for the zone fault LED to light.

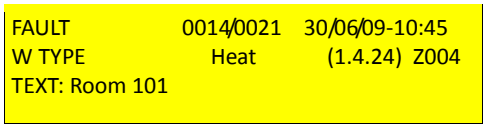
There is a cable break, or short circuit to devices in that zone.



A device has been removed from that zone.



A device has been changed for one of a different type



There is a Double Address in this zone (see previous section)

A device in that zone is communicating a fault condition to the panel with its analogue value. A value less than 8 is usually a fault condition. (This could be a zone monitor reporting a fault in its zone wiring, for example.)

15.4 SUPPLY FAULTS

LOSS OF BATTERY POWER OR LOW BATTERY VOLTAGE

- Check battery fuse.

- Check that battery connections are secure.
- Check battery voltage (should be around 26-27V).
- Check that the two batteries are connected in SERIES (to give double the voltage of 1 battery on its own.
- Check the charger fuse.

LOSS OF MAINS POWER

- Check mains fuse.
- Check that main power is present.
- Check charger fuse.

LOSS OF BATTERY CHARGER

- Check charger fuse.

HIGH INTERNAL RESISTANCE OF BATTERY

- Replace old batteries with new ones.

Other possible causes of supply faults are:-

- Wrong Charging Voltage.

  The charging voltage should be 27.6V off load at 22-24oC. If it has been altered, reset using potentiometer

- Overcharged Batteries.

  Remove the batteries and measure the voltage. If they are reading over 27.6 V then the batteries are overcharged. Try to run the panel on batteries only for half an hour or so to try to discharge the batteries. If this doesn't solve the problem, replacement batteries will be required.

15.5 EARTH FAULTS

An EARTH fault indicates that something is shorting to earth (usually through the cable screen). Disconnect the earth screens one at a time to determine the problem line.

(Note: connecting other equipment , e.g. an oscilloscope , to the panel can give an earth fault)

The earth fault message will indicate if it is a Positive or Negative voltage shorting to earth.

DO NOT DISCONNECT THE MAINS EARTH CONNECTION. THIS WILL CAUSE A PROBLEM WITH THE PANELS OPERATION

15.6 SYSTEM FAULT

A system fault is an abnormal microprocessor running condition due to various unexpected phenomena.

This will result in the panel attempting to correct itself. Should this fault occur, the System Fault LED, General Fault LED, General Fault relay and internal fault buzzer will be constantly active. A system fault indication can be cleared by momentarily closing jumper link JP20 on the display card (to the right of the coin battery. If the fault does not clear please consult your distributor.

15.7 SOUNDER FAULTS

Faults on the two conventional sounder circuits (connected to the Terminations PCB) and addressable sounders (connected to the loops) are indicated on the LCD display. Conventional sounder circuit faults are also indicated by a flashing LED on the OUTPUT DISABLEMENTS / FAULTS section of the panel.

15.8 OUT OF SERVICE FAULTS

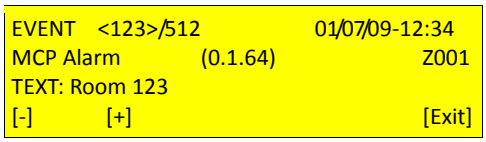
If the system is in a condition in which it is unable to detect a fire or sound the alarm, for example if a loop is being configured, this is indicated to the User by flashing the "Out of Service" LED.

16. EVENT LOGS

In order to maintain useful system information, the ProFyre A4 uses 4 separate event logs. All events, except Tests, are stored in the general log which has a capacity of 4096 events. Alarm events and Fault events are also stored in the Alarm log and Fault log, respectively. The former log can hold up to 512 events, and the latter up to 1024 events. Using this method ensures that regardless of the most recent entries, the last 512 alarms and 1024 faults will always be available. Test events are stored in a separate 512 entry log.

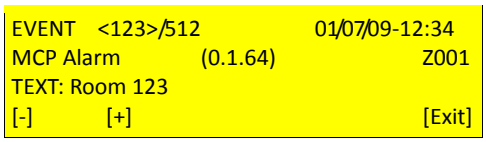
Alarm Log (512):

The screen will show the event number, the total no. of alarms, the date, the time, the type of device that is in alarm, the address of the device in alarm, which zone that it is in, and its location (i.e. text label). A maximum of 512 alarm events can be stored. When the alarm log is full, the next alarm over-writes the first alarm event, and so on.



Fault Log (1024):

The screen will show the event number, the total no. of alarms, the date, the time, the type of device that is in alarm, the address of the device in alarm, which zone that it is in, and its location (i.e. text label). A maximum of 512 alarm events can be stored. When the alarm log is full, the next alarm over-writes the first alarm event, and so on.



All types of faults are stored in this category. For a device fault the layout is almost identical to the Alarm log (see example). For a general fault, line 2 is simply a description of the fault, and there is no information on line 3. The size of the Fault log is 1024.

Test Log (512):

This category indicates events that occur to devices contained in zones which are in the test mode. The LCD display is identical to that of the Alarm log. 512 test events can be stored.

All Log (4096):

This category stores all Alarm and Fault events but not Test events. It has a capacity of 4096.

Note: The Event Logs (also known as Reports) can be accessed by the Level 1 password (default 1111) or the Level 2 password (default 2222). The only difference is that with the Level 2 password it is also possible to erase the entire contents of all 4 logs. This should NOT be done during the normal use of the panel.

17. CAUSE AND EFFECT (ACTIONS)

The ProFyre A4 system has very comprehensive Cause and Effect capabilities (known in the panel menu as Actions).

The Default factory configuration is that any alarm will activate all outputs on the panel.

Like most addressable systems, the panel allows comprehensive programming of the sounder outputs. It is the responsibility of the commissioning engineer to verify that the programmed panel actions operate the sounders as required.

Any input (or cause) can generate any output (or effect). For example, if the input is a fire in zone 1 (e.g. an optical detector triggered by smoke), the system can be programmed to generate output(s) (e.g. operate one or more sounders or relay outputs in one or more zones).

The inputs and outputs can be selected from 4 categories – Point, Zone, Loop & Panel.

Example of Selecting a Cause & Effect (New Action)

The following example shows ACTION No. 5 (top right of LCD) being selected. A fire (input) in Zone 1 is programmed to have the effect of activating the sounders in Zones 1, 2 and 3. In addition, the activation of the sounders is delayed by 30 seconds after the fire has been detected.

Select Input Category: **Zone**

```
ACTION CREATION                    0005
              INPUT SELECTION

[Point]   [Zone]   [Loop]   [Panel]
```

Select Range of Zones: **001**

Select Type of Input: **General Alarm**

```
ZONE SELECTION                     0005
RANGE:  001      TO      001

[General Alarm]                    [More]
```

(NB General Alarm means detector alarm,

MCP alarm or multiple alarm. By selecting [More] the operator can choose from one of these 3. For example, if MCP alarm is chosen, the Cause & Effect will only apply to an MCP alarm in Zone 1, and will ignore detector alarms in Zone 1. Multiple alarm means that at least 2 points / devices in Zone 1 must be activated before the programmed Effects occur)

Select Output Category: Zone

Select Remote (RMT) Event & Panel No. - this is used when the panel being configured (e.g. 0001) is networked to 1 or more other panels (e.g. 0002), causing the outputs of 0002 to operate according to the 0002 panel's configuration, when there is a fire in the 0001 panel.

```
ACTION CREATION                    0005
OUTPUT SELECTION
RMT EVENT : <YES>          PANEL : [0002]
[Point]   [Zone]   [Loop]   [Panel]
```

Select Range: **Zones 1 - 3**

Select Delay: **30** seconds

Select Type of O/P: **Switch on all Sounders**

```
ZONE SELECTION                     0005
RANGE:  001      TO      003
DELAY: [030]
[Switch on all sounders]           [More]
```

(NB other types of output are: Switch off all sounders, switch on all outputs, switch off all outputs, switch on all relays & switch off all relays).

The 4 digit number in the top right of each display is the Action Number. If more than one action is chosen, then ACTION 0001 will be executed first, then ACTION 0002, and then ACTION 0003, and so on. However, because the time taken to perform each action is very small, it will appear to user that all actions occur simultaneously. Be careful when configuring the panel that there are no unintentional conflicts between the ACTIONS.

If required, it is possible to delay the execution of one or more of the ACTIONs. This is done through the output parameter DELAY

(000 to 600 seconds).

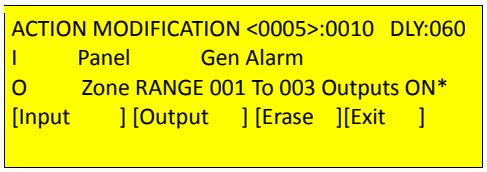
ACTIONS can be modified later by selecting Modify from the Actions menu. For example:

Modify Action Number 5. Total Actions 10.

Input: Panel – General Alarm.

Output: Zone – Range 1 to 3 with Outputs ON.

The * means that the Output includes a RMT Event.



The current action (i.e. 0005) can be erased by selecting the [Erase] command. In this case, actions 0006 to 0010 will then be automatically re-numbered as actions 0005 to 0009.

See also the Menu Command Structure in Section 18.

18. MENU COMMAND STRUCTURE

This section summarises the complete command structure of the A4 panel. Various functions can be accessed at different levels within the panel, the **UNRESTRICTED** level, the **CONTROLS ACTIVE** level, the **USER** level, and the **INSTALLER** level.

At the **UNRESTRICTED** level (where the black controls key is switched OFF), the basic status of the panel is indicated by its LEDs and alphanumeric display (LCD). An overview of any fires fault, disablement and test condition can all observed at this level. An audible warning is also given when a new event occurs. With one exception all the keys (i.e. front door buttons) are inactive at this level. The exception occurs when a delay to the fire alarm outputs (sounders etc.) has been selected by the installation engineer. In this case, when a fire alarm is indicated, [END DELAY] is displayed above key F4. Pressing F4 causes the outputs to be activated immediately.

At the **CONTROLS ACTIVE** level, the following controls are active:

START/STOP SOUNDERS, SILENCE BUZZER, RESET, the ▶and ◀keys to scroll faults and fires, the F keys to display faults during a fire alarm and scroll between information on the main screen during disablements and test conditions, and the numeric keys to change a password.

At the **USER** level, the user can also access the information shown below in Section 18.1, by entering his / her unique level 1 password

18.1 USER LEVEL (LEVEL 1)

Default Password 1111

PRIMARY SELECTION	SECONDARY SELECTION	COMMENT
Zones	Show	Displays zone details
	Show Enabled Zones	Indicates enabled zones
	Show Disabled Zones	Indicates disabled zones
	Show Test Zones	Displays zones in test mode
	Enable	Enables zones in range x to y
	Disable	Disables zones in range x to y
	Test	Zones in range x to y are changed to test mode & enables / disables sounders in zones in test mode
Point	Show	Shows loop, address, zone, type, mode, analogue value, text for each point
	Show Disabled Points	Indicates disabled points
	Enable	Enables points in range x to y
	Disable	Disables points in range x to y
Relays	Enable All	Enables all relays
	Disable All	Disables all relays
	Enable by Zone	Enables relays in zones x to y
	Disable by Zone	Disables relays in zones x to y
	PCB outputs	Enable / Disable Alarm relay and /or Fault relay on Terminations PCB
	Show	Shows the number of Enabled & Disabled Relays
Sounders	Enable All	Enables all sounders
	Disable All	Disables all sounders
	Show	Shows the number of Sounders
Event Log	Faults	Event No Date/Time Event Panel No/Loop No/ Addr Zone (if applicable) Text (if applicable)
	Alarms	Event No Date/Time Event Panel No/Loop No/ Addr Zone (if applicable) Text (if applicable)
	Test	Event No Date/Time Event Panel No/Loop No/ Addr Zone (if applicable) Text (if applicable)
	All	Event No Date/Time Event Panel No/Loop No/ Addr Zone (if applicable) Text (if applicable)
Delays	Delay On/Off	Switches delay on/off which has been selected at AL3
Test LED & LCD		All LEDs and LCD pixels active. Buzzer activated

The installation engineer has to access the information in Section 18.2 by entering the unique level 2 password.

18.2 INSTALLER LEVEL (LEVEL 2)

Default Password 2222

PRIMARY SELECTION	SECONDARY SELECTION	TERTIARY SELECTION OR COMMENT
Loop	Autosearch	Searches for all devices on specified loop & displays: VALID: xxx DOUBLE ADDRES: xxx MODIFIED TYPE: xxx
	Reports	Optical:xxx Heat: xxx Opt-Heat: xxx MCP: xxx Zone: xxx Sounder: xxx Input-O:xxx Ionisat:xxx ERROR : xxx
	Addresses	Address Map
	Autocheck	Checks from start of loop (S) & then end of loop (R). Displays no. of devices seen from each end of loop
	LED Flash Setup	Device LEDs flash every 2s, (selected per loop)
	Protocol Setup	Selects Standard or Mark 2 device protocol
Zones	Zone edit	Edits zone text label & adds points to zone xxx in loop y
	AutoAssign points	Assigns points to zones automatically. 25 devices per zone
	Add point	Adds points to zone xxx in loop y
Point	Edit Point	Displays type, mode, analog value & text for each point, & allows text to be edited
	Platform sounder	Operates Remote LED Output or Associated Sounder Base
	Toggling LED	Activates LED selected point
	Common sounder	Configures common sounders ON or OFF for each loop
Actions	New	See Section 18.3
	Modify	
Event Log	Faults	Event No Date/Time Event Panel No/Loop No/ Addr Zone (if applicable) Text (if applicable)
	Alarms	Event No Date/Time Event Panel No/Loop No/ Addr Zone (if applicable) Text (if applicable)
	Test	Event No Date/Time Event Panel No/Loop No/ Addr Zone (if applicable) Text (if applicable)
	All	Event No Date/Time Event Panel No/Loop No/ Addr Zone (if applicable) Text (if applicable)
	Erase	Erase Log (Yes / No)

General	Installation Name	Reference Maintenance Phone
	Language	English Espagnol
	Passwords	Level 1 Range xx to xx Password xxxx Level 2 Current Password New Password
	Power supply	PSU Charger Motherboard Charger
	Check version	Panel s/w version & s/w versions of each loop card
	SW Upgrade	Enables an authorised engineer to upgrade the A4 software, using PC software
Network	Node Setup	Address & Node Type per Panel (Also TCP/IP settings for Gateway Network card)
	Network Filter	All / Selective Listen Address of Repeater Panel
	Node search	Finds & configures all network nodes.
Printer	Real Time	Chose if Alarm and/or Fault events are printed in real time
	Print Log	Select a date to print events from that date to present day
Date-Time	Date xx:xx:xx Time xx:xx	Date & Time Setup

18.3 CAUSE & EFFECT

ACTIONS (NEW) (See also Section 17)

	INPUT	**SELECTION**	
POINT	**ZONE**	**LOOP**	**PANEL**
Loop (1 – 4)	Zone (001 – 20)	Loop (1 – 4)	General Alarm / Multiple Point Alarm / Multiple Zone Alarm NB Multiple Point Alarm = 2 points in alarm in the panel causes fire condition NB Multiple Zone Alarm = 2 zones in alarm before panel enters fire condition
Addr (001 – 125)	General Alarm / MCP Alarm / Detector Alarm / Multiple Point Alarm NB Multiple Point Alarm = 2 alarms in a zone before panel enters fire condition	General Alarm	
Point Alarm			

	OUTPUT	**SELECTION**	
POINT	**ZONE**	**LOOP**	**PANEL**
Loop (1 – 4)	Range (001–20)	Range (1-4)	Delay (000–999)
Addr (001 – 126)	Delay (000 – 999)	Delay (000–999)	Outputs ON Outputs OFF Sounders ON Sounders OFF Relays ON Relays OFF PCB Sounder One ON PCB Sounder One OFF PCB Sounder Two ON PCB Sounder Two OFF
Delay (000 – 999)	Outputs ON Outputs OFF Sounders ON Sounders OFF Relays ON Relays OFF	Outputs ON Outputs OFF Sounders ON Sounders OFF Relays ON Relays OFF	
RMT EVENT (Y/N)	RMT EVENT (Y/N)	RMT EVENT (Y/N)	RMT EVENT (Y/N)

ACTIONS (MODIFY)

For each ACTION (Cause & Effect) previously selected you can:

Change Input Selection, i.e. Point / Zone / Loop / Panel etc
Change Output Selection, i.e. Point / Zone / Loop / Panel etc
Erase one or more previous action
Exit to New / Modify

19. PANEL SPECIFICATIONS

19.1 ENCLOSURE SPECIFICATIONS

DESCRIPTION	VALUE
ENCLOSURE SIZE (L x W x D mm)	485 x 477.5 x 125
TOP CABLE ENTRIES	20
BOTTOM CABLE ENTRIES	6

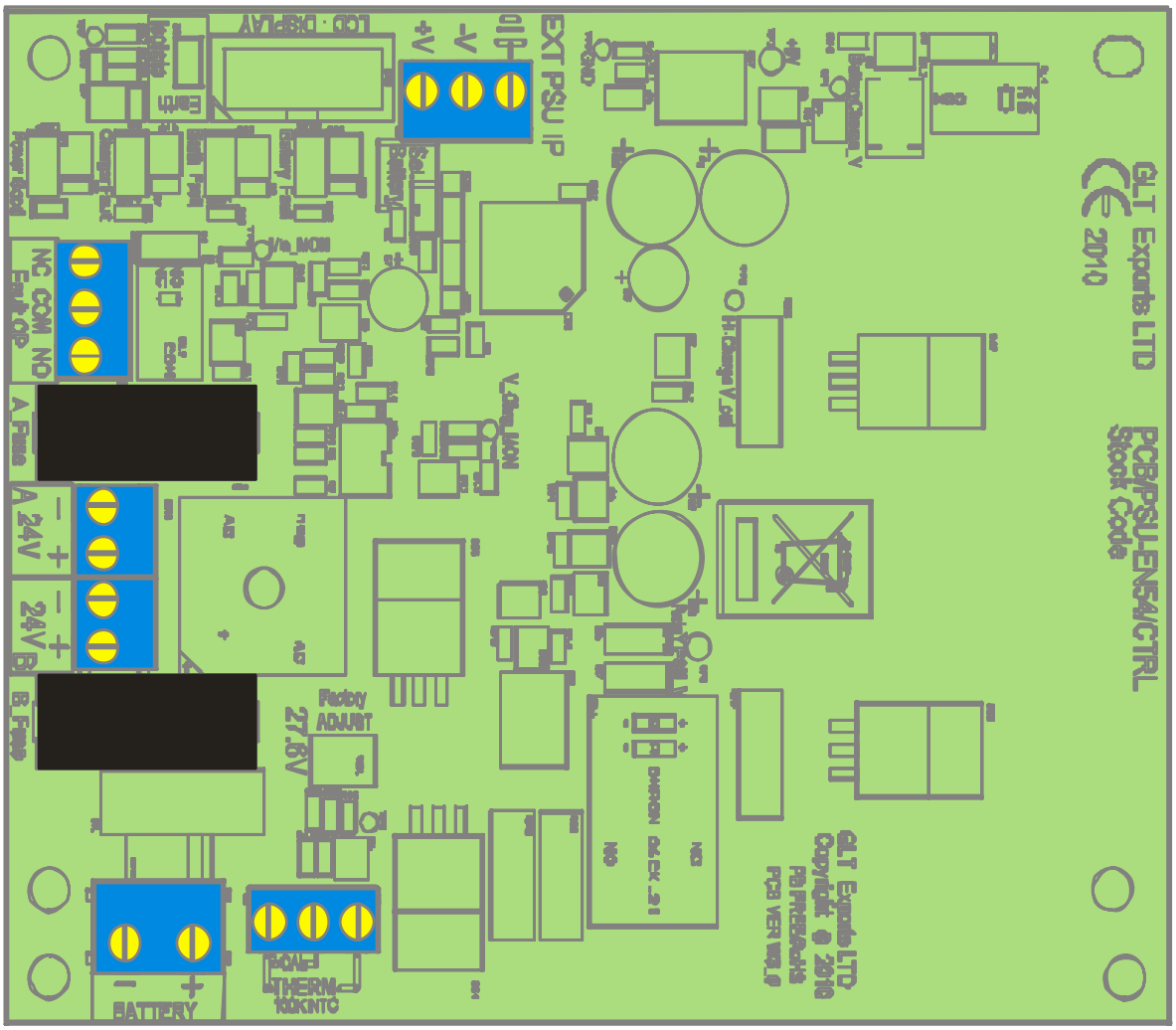
19.2 ELECTRICAL SPECIFICATIONS

ELECTRICAL DESCRIPTION	VALUE
MAINS VOLTAGE	230 V AC + 10% / - 15%
BATTERY VOLTAGE	2 x 12V SLA (27.6V DC @ 20 C) (7Ah – 17Ah)
POWER SUPPLY	NON-INTEGRAL (SWITCH MODE) DC OUTPUT: Vmax = 31V ,Vmin = 19V I max A: 4.1 A Ripple & Noise: <= 0.6V
CIE DC INPUT VOLTAGE	Vmax = 31.5V, Vmin = 19V
CHARGER VOLTAGE	27.6V
CONVENTIONAL SOUNDER OUTPUT (x2)	I max: 450mA Quiescent voltage: -5 to -9V DC Active voltage: 18 to 28V DC End-of-Line Resistance: 4k7 ohm 0.25W
FAULT RELAY OUTPUT (x1)	Normally Energised (C,NO,NC) Contact rating: 30V DC @ 1A
LOOP VOLTAGE	Vmax 32 V DC Vmin 26 V DC
MAXIMUM LOOP CURRENT	500 mA
NUMBER OF LOOPS	4
MAXIMUM NUMBER OF ZONES	20
MAXIMUM LOOP CAPACITY	125
MAXIMUM LOOP LENGTH	2 km
MAXIMUM LOOP RESISTANCE	44 ohm
MAXIMUM LOOP CAPACITANCE	500 nF
MAXIMUM BAUD RATE	1024
MAXIMUM NETWORK SIZE	64 nodes
MAXIMUM DISTANCE BETWEEN NODES	1 km
CABLE TYPE	2 Fire Proof 2 core + screen 1.5 mm
ALPHA NUMERIC (LCD) DISPLAY	40 x 4 characters
LED INDICATIONS	Fire Zones 1 – 20 Fault / Disable / Test Zones 1 - 20
KEY ENTRY	12 alphanumeric 6 navigational 3 mandatory 4 menu functions (F1, F2, F3, F4)
ENVIRONMENTAL DATA	Temperature: -5 to 40 C Relative Humidity: 95% Non-Condensing
ENCLOSURE RATING	IP 30
OTHER PORTS	USB RS485 via plug in network card TCP/IP via plug in network card
EN 54-2 Optional Functions with Requirements	7.8, 7.11, 8.3, 9.5, 10

19.2 FUSE SPECIFICATIONS

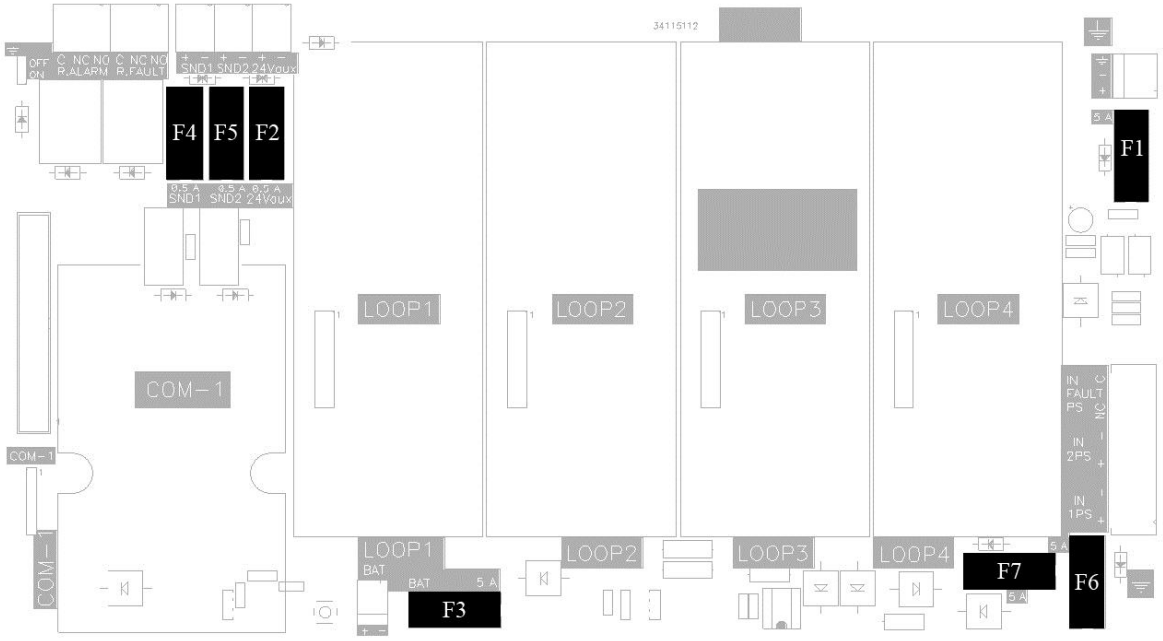
The ProFyre A4 Panel has the following Fuses

19.2.1 Power Supply Controller PCB



Fuse Label	Rating	Description
A_Fuse	2.5A	PSU Output – Channel A
B_Fuse	2.5A	PSU Output – Channel B
Link Fuse	8A	Battery fuse

19.2.2 CIE Termination PCB



Fuse	Rating	Description
F1	NOT USED	NOT USED
F2	F 500 mA	24V Aux Supply Fuse
F3	NOT USED	NOT USED
F4	F 500 mA	Conventional Sounder Circuit SND 1
F5	F 500 mA	Conventional Sounder Circuit SND 2
F6	F 5 A	IN PS1 Fuse – Power from PSU Controller
F7	F 5 A	IN PS2 Fuse – Power from PSU Controller

(Fuses 1 & 3 are used for the non- approved “Motherboard charger” option)

20. STANDBY BATTERY REQUIREMENTS

20.1 PANEL & DEVICE CURRENT RATINGS

The Following Table shows the Quiescent, Fault & alarm currents of the main parts of a ProFyre A4 Fire Alarm System:

DEVICE	I Q (MA)	I FLT (MA)	I ALM (MA)	MAX PER LOOP	MAX PER SYSTEM
ProFyre A4 1 Loop Analogue Addressable Fire Alarm Panel	140	140	190	N/A	32
ProFyre A4 2 Loop Analogue Addressable Fire Alarm Panel	190	190	240	N/A	32
ProFyre A4 3 Loop Analogue Addressable Fire Alarm Panel	240	240	300	N/A	32
ProFyre A4 4 Loop Analogue Addressable Fire Alarm Panel	300	300	360	N/A	32
ProFyre Addressable Manual Call Point	1	N/A	2.9	125	500
ProFyre Addressable Weatherproof Manual Call Point	1	N/A	2.9	125	500
ProFyre Input Unit	0.9	2.8	2.9	125	500
ProFyre Input Output Unit	0.9	2.8	10.6	16	64
ProFyre Input Output Unit – mains switching	0.9	2.8	19	10	40
ProFyre Sounder Control Module	0.9	2.8	10.6	16	64
ProFyre Sounder Control Module – 4 circuits	0.8	1.09	0.8	16	64
Zone Monitor Unit	1.08	1.09	1.09	10	40
Zone Monitor Unit – 4 zones	1.08	1.09	1.09	10	40
ProFyre Loop Powered Door Magnet interface	1.0	3.0	16.6	12	48
ProFyre Extra Addressable Optical Smoke Detector	0.48	N/A	2.3	125	500
ProFyre Extra Addressable Heat Detector	0.44	N/A	2.4	125	500
ProFyre Extra High Temperature Heat Detector	0.44	N/A	2.4	125	500
ProFyre Extra Addressable Opto-Heat Detector	0.52	N/A	2.3	125	500
ProFyre Addressable Common Sounder Base	0.4	N/A	4	64	256
ProFyre Addressable Common Sounder Flasher Base	0.7	N/A	5.5	48	192
ProFyre Addressable Maxitone Sounder	0.6	N/A	12	32	128
ProFyre Addressable Maxitone Sounder Flasher	0.6	N/A	15	24	96
ProFyre Addressable Securetone 2 Sounder	0.5	N/A	4	64	256
ProFyre Addressable Securetone 2 Sounder Flasher	0.9	N/A	5.5	48	192
ProFyre Addressable Remote LED Indicator	1.5	N/A	10	32	128
ProFyre Addressable 3 wire Remote LED	0	N/A	10	32	128
ProFyre Addressable Beam Detector (5-50m)	5	7	9	20	80
ProFyre Addressable Beam Detector (50-100m)	5	7	9	20	80
Conventional Sounders Via 2 Sounder Circuits			*450mA per Conv Circuit*		
ProFyre Conventional Maxitone Sounder	0	N/A	15	N/A	60
ProFyre Conventional Miditone Sounder	0	N/A	15	N/A	60
ProFyre Conventional Securetone Sounder	0	N/A	15	N/A	60
ProFyre Conventional Megatone Sounder	0	N/A	200	N/A	4
ProFyre Conventional Flasher	0	N/A	90	N/A	10
ProFyre Conventional Sounder Flasher	0	N/A	110	N/A	8
ProFyre Conventional 6” Bells	0	N/A	25	N/A	36
ProFyre Conventional 8” Bells	0	N/A	35	N/A	25
Conventional Detectors (via a Zone Monitor)					
ProFyre Conventional Optical Detector	0.06	N/A	25	N/A	N/A
ProFyre Conventional Heat Detector (A1R)	0.04	N/A	25	N/A	N/A
ProFyre Conventional Heat Detector (CS)	0.04	N/A	25	N/A	N/A
GSM COMMUNICATOR	200	500	500	N/A	1

20.2 STANDBY BATTERY CALCULATION

In order to calculate the standby battery size required, the following formula can be used:-

Battery Size (Standby time in Amp Hours) = $1.25 \times [(T_{ALM} \times I_{ALM}) + (T_{SBY} \times (I_{QP} + I_{QZ}))]$

Where:

T_{ALM} = Maximum time in hours required for the alarm [½ hour is most common time]

I_{ALM} = Total Alarm Current in amps

I_{ALM}-SND = Alarm Current of Sounders in amps

T_{SBY} = Standby time in hours for the system after mains failure [normally 24, 48 or 72 hr]

I_{QP} = Quiescent current in amps of control panel in fault condition [because of mains failure]

IAP = Alarm current in amps of control panel

IQL = Quiescent current in amps of all loop devices.

Typical Example:

A system comprises of a 1 Loop A4 panel, with 80 ProFyre Extra Addressable Optical Smoke Detectors, 15 ProFyre Addressable Manual Call Points, 20 ProFyre Addressable Securetone 2 Sounders and the required standby is 24 hours. It will need to operate in alarm for ½ hour.

Calculate the battery size required.

T_{ALM} = 0.5 Hr

$I_{ALM\text{-}SND}$ = 20 x 0.004 =0.08A

T_{SBY}= 24 Hr

I_{QP} = 0.20A

I_{AP} = 0.19A

I_{QL} = 80 x 0.00044 + 15 x 0.001 + 20 x 0.0005 = 0.0602A

$I_{ALM} = I_{ALM\text{-}SND} + I_{AP} + I_{QL}$ = 0.08 + 0.19 + 0.0602 = 0.3302

Therefore using the equation:

Battery Size (Standby time in Amp Hours) = 1.25 x [(T_{ALM} x I_{ALM}) + (T_{SBY} x (I_{QP} + I_{QL}))]

Battery Size (Standby time in Amp Hours) = 1.25 x [(0.5 x 0.33) + (24 x (0.20 + 0.06))]

Battery Size (Standby time in Amp Hours) = 1.25 x [(0.5 x 0.33) + (24 x 0.26)]

Battery Size (Standby time in Amp Hours) = 1.25 x [0.165 + 6.24]

Battery Size (Standby time in Amp Hours) = 1.25 x 6.405

Battery Size (Standby time in Amp Hours) = 8.01 Amp Hours

For a system like this, 2 x 12V sealed lead acid batteries must be used each with a capacity greater than 8.01 Ah. For example, 12Ah

CE

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EN54-2:1997+A1:2002 + A2: 2006
EN54-4:1997+A1:2002 + A2: 2006

Control and indicating equipment for fire detection and fire alarm systems for buildings

ProFyre A4

Provided options:

Output to fire alarm devices
Delays to outputs
Fault signals from points
Disablement of addressable points
Test condition

Other Technical Data: See Doc: “ProFyre A4 Product file” held by the manufacturer